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CENTRAL INTELLIGENCE AGENCY

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25X1

COUNTRY USSR

REPORT

SUBJECT Book on Soviet Machinery and Industrial Equipment on the World Market

DATE DISTR. 14 August 1959

NO. PAGES 1

REFERENCES RD

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SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE

A 120-page book in English, entitled Soviet Machinery and Industrial Equipment on World Market, published in 1958 by the USSR Chamber of Commerce,

contains photographs of plants and equipment sold by the Soviet trade organizations to Soviet-bloc countries and economically underdeveloped countries of the West.

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Soviet machinery

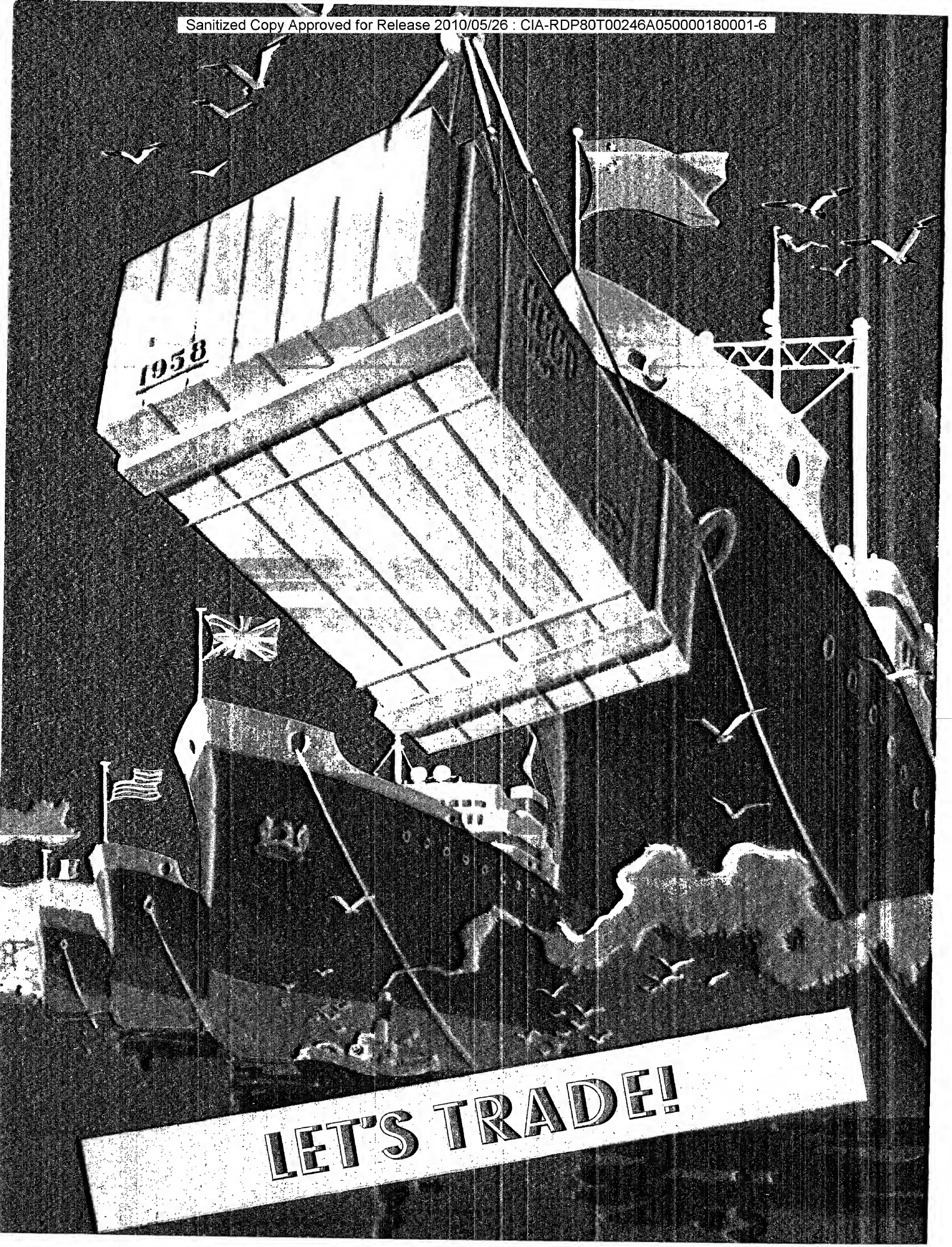
AND INDUSTRIAL EQUIPMENT ON WORLD MARKET

SOVIET MACHINERY AND INDUSTRIAL EQUIPMENT ON WORLD MARKET

1958

U.S.S.R. CHAMBER OF COMMERCE

Sanitized Copy Approved for Release 2010/05/26 : CIA-RDP80T00246A050000180001-6



CONTENTS

FOREIGN TRADE U.S.S.R.

AN INSTRUMENT OF PEACE AMONG NATIONS

M. NESTEROV

The Soviet Union interested in preserving and strengthening peace — the cornerstone of progress and improving living standards — pursues the policy of peaceful co-operation among nations, the policy of increasing economic ties with all foreign countries on the basis of equality and mutual advantage, irrespective of their social structure.

This policy follows from the Leninist principle of the possibility of coexistence and peaceful competition of two different systems — the Socialist and the Capitalist.

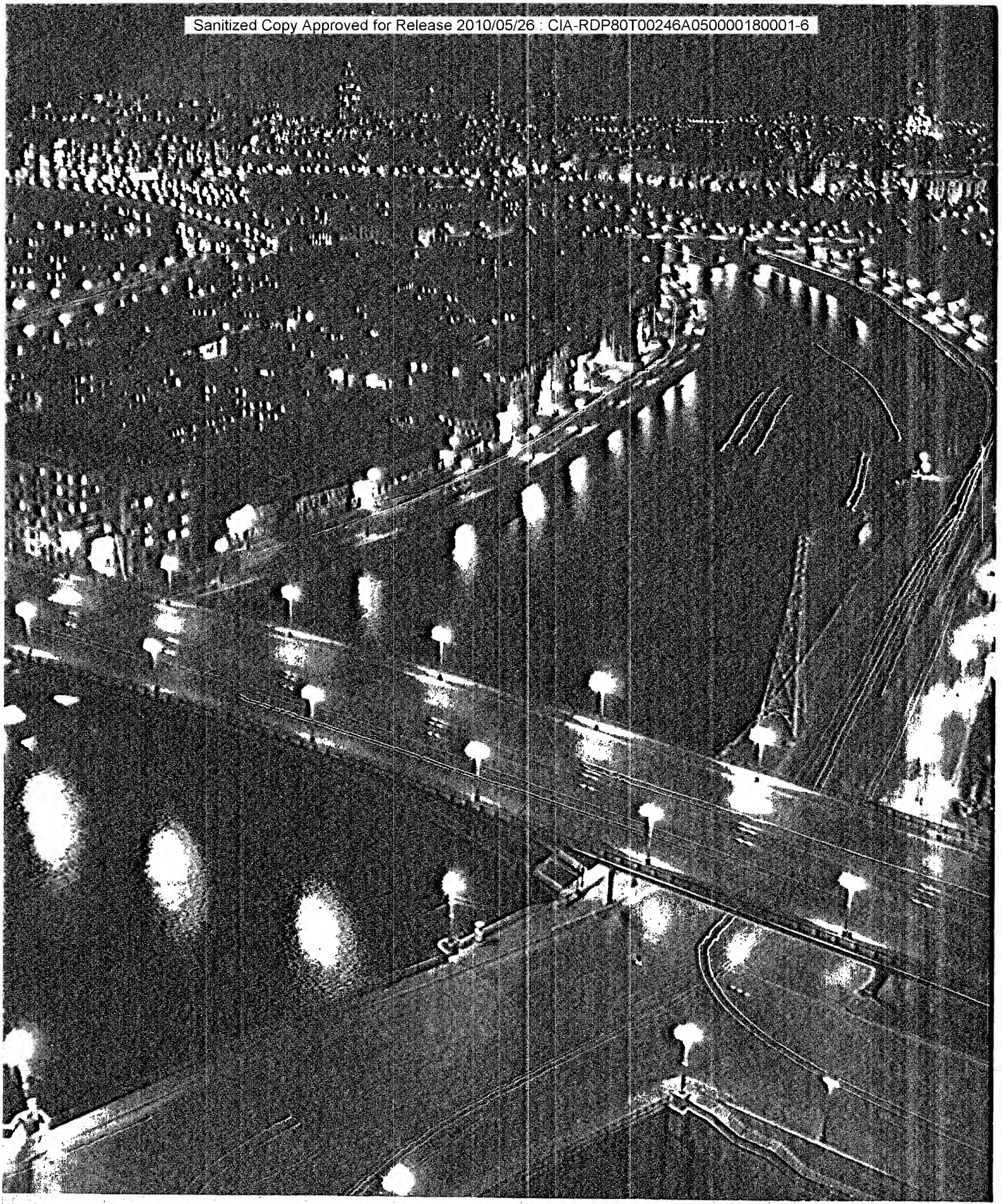
The policy of peace, the policy of strengthening and developing of economic co-operation with all countries has been followed by the Soviet Government in all stages of its history. This policy still remains fundamental at the present moment. This is proved by the steps unterdaken by the Soviet Government to increase international economic ties.

The question of strengthening of economic relations between states was one of the main questions discussed at the Meeting of the Heads of Four Powers in Geneva in 1955. The Supreme Soviet of the U.S.S.R. in its decision on the results of the Geneva Conference of the Heads of Four Powers stated that "the establishment of wider political, economic and cultural relations between countries, irrespective of their social and political structure, on the basis of respect of sovereign rights and of non-interference in internal affairs, is to the interest of the people and must lead to the strengthening of peace, friendship and co-operation among them"

Much attention was devoted to this question at the XX Congress of the Communist Party of the Soviet Union which appealed to the capitalist countries with the slogan "Let us trade".

Over a number of years the Soviet Union has adopted definite measures aimed at developing economic relations with other countries. Its representatives taking part in international economic organizations make constructive suggestions for increasing international trade, for giving economic aid to the underdeveloped countries, and for helping in the creation of an atmosphere conductive to close co-operation. The Soviet Government welcomes the visits of foreign delegations to the Soviet Union and encourages similar visits of Soviet delegations to other countries. Contacts between the representatives of the Soviet Union and foreign countries become more and more numerous and productive. The Soviet Union takes an active part in international fairs and exhibitions.

After World War II up to 1957, the Soviet Union has organized 98 exhibitions abroad. The countries where Soviet exhibitions have taken place — 30 in all — include the following: Austria, Great Britain, Argentina, Afghanistan, Bulgaria, Hungary, Greece, German Democratic Republic, Holland, Egypt, India, Indonesia, Italy, Chinese People's Republic, Poland, Syria, Thailand, Finland, Yugoslavia,



Moscow at night-time

and others. Soviet exhibitions abroad meet with deserved success. Over 80 million people have visited the Soviet pavilions, and entries made in the visitor's books bear witness to the fact that visits to Soviet exhibitions have helped people of many countries to get rid of the erroneous ideas of the Soviet Union, instilled in their minds by the bourgeois press, and that they serve to open the eyes of the people on the gigantic upswing of Soviet economics and culture, on the peaceful intentions of the Soviet Union and its unswerving efforts aimed at the widening of international co-operation in all spheres of life.

The constant efforts exerted by the Soviet Union in this direction, coupled with the growth of interest in the strengthening of mutually profitable trade relations shown by foreign countries, have led, in the last few years, to the number of countries trading with the Soviet Union being considerably increased. In 1957 the Sovied Union traded with 70 countries while in 1953 it traded with only 51 countries. The part played by our country in world trade has increased considerably. If, in 1938, the Soviet Union occupied 22nd place in world trade, today it occupies the sixth.

Trade with the countries of People's Democracies, ever increasing from year to year, occupies the most predominant place in the foreign trade of the Soviet Union. If, in 1950, the total trade between the Soviet Union and the People's Democracies amounted to 10.6 billion roubles, in 1957 it exceeded 20 billion.

Of paramount importance for the development of economic relations is the Declaration of the Soviet Government of October 30, 1956, which stipulated the basis of mutual relations between the Soviet Union and the other socialist countries. A series of conferences that took place at the end of 1956 and in 1957 with the Government delegations of the Chinese People's Republic, the Polish People's Republic, the Rumanian People's Republic, the German Democratic Republic, the Czechoslovakian People's Republic, the Bulgarian People's Republic, and the Hungarian People's Republic, not only helped to solve important political problems but also served to ensure further development of economic co-operation with these countries on the basis of equality, mutual advantage and fraternal aid.

Trade agreements, signed in 1958 with Czechoslovakia, Bulgaria, GDR, Albania, Jugoslavia, Poland and China, provide for a considerable increase of Soviet trade with these countries.

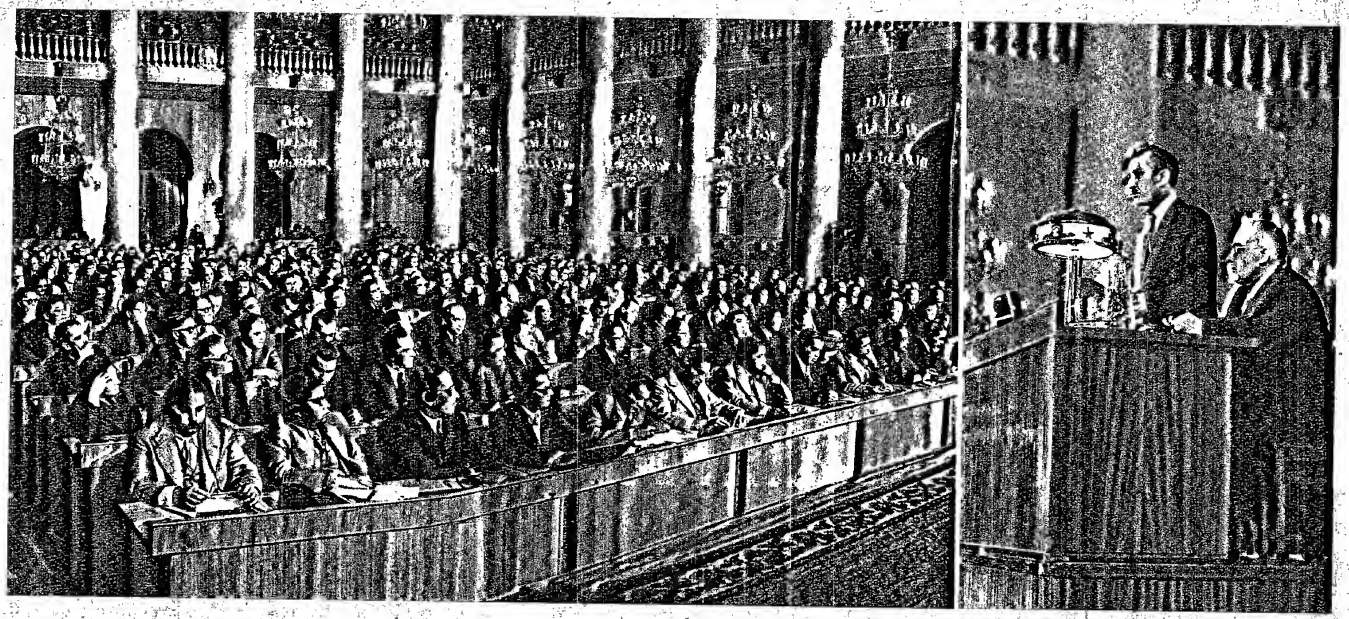
Trade relations between the socialist countries help the development of industrialization and economics of these countries. The supply of equipment for entire factories by the Soviet Union, plays an especially significant role in the industrialization of the People's Democracies.

Besides trade relations the socialist countries enjoy other forms of economic co-operation: business co-ordination of economic plans, loans on easy terms extended by the more developed countries to those less developed economically; technical aid in planning, building, assembling and starting of industrial plants, and also training of personnel; free exchange of technical documentation, including blueprints of plants, machinery and equipment, description of technological processes, etc.; exchange of specialists for study of scientific and technological achievements, and the solving of particular technical problems by specialists from several countries working together.

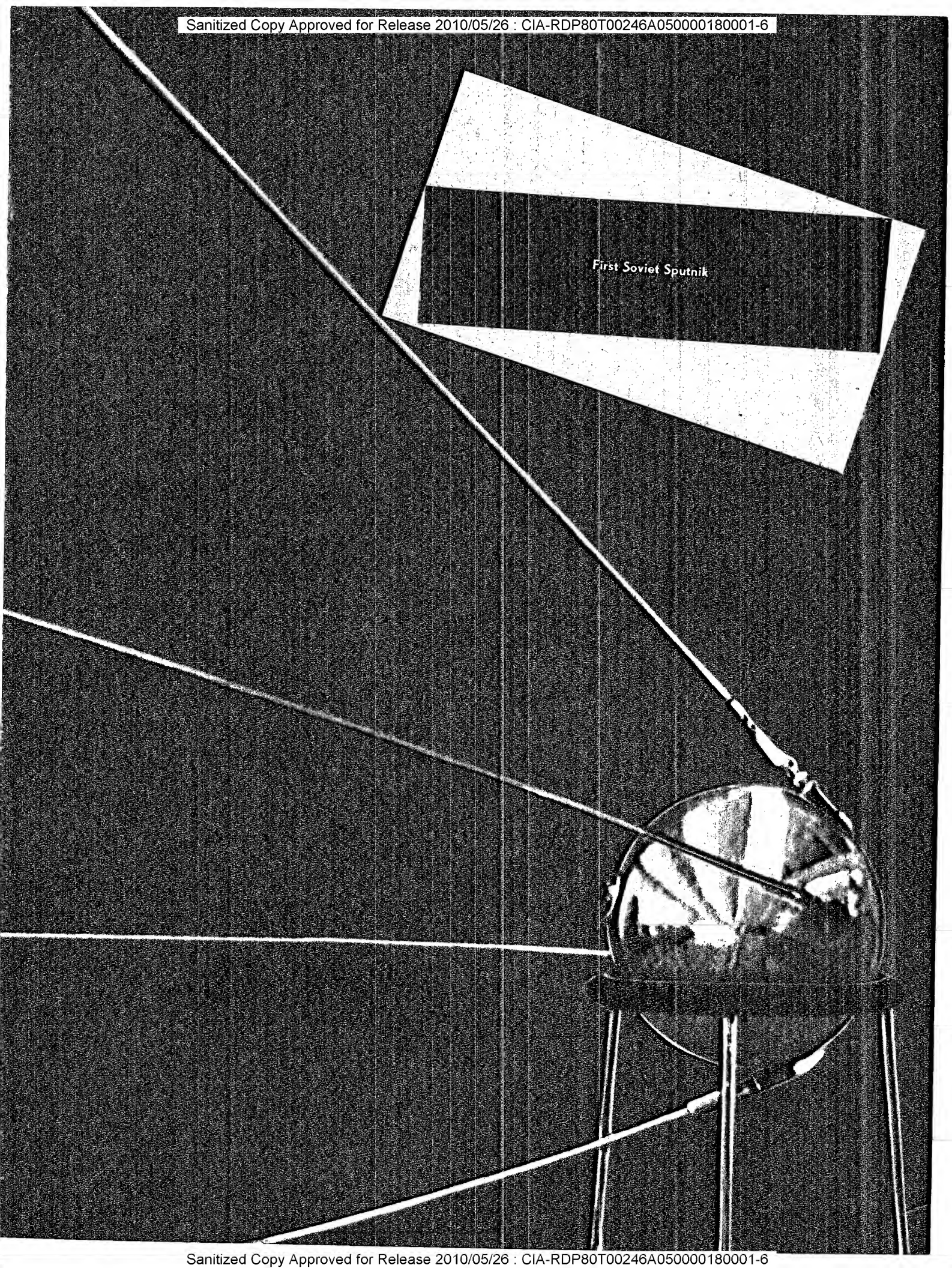
With the capitalist countries the Soviet Union has mainly trade relations. With a number of these the Soviet Union co-operates in planning and building of plants and exchanges technical information; to some it gives loans and long-term credits. In developing its foreign trade the Soviet Union is acting on the principle that unrestricted international trade without discriminations promotes friendly relations between the peoples and serves the cause of Peace.

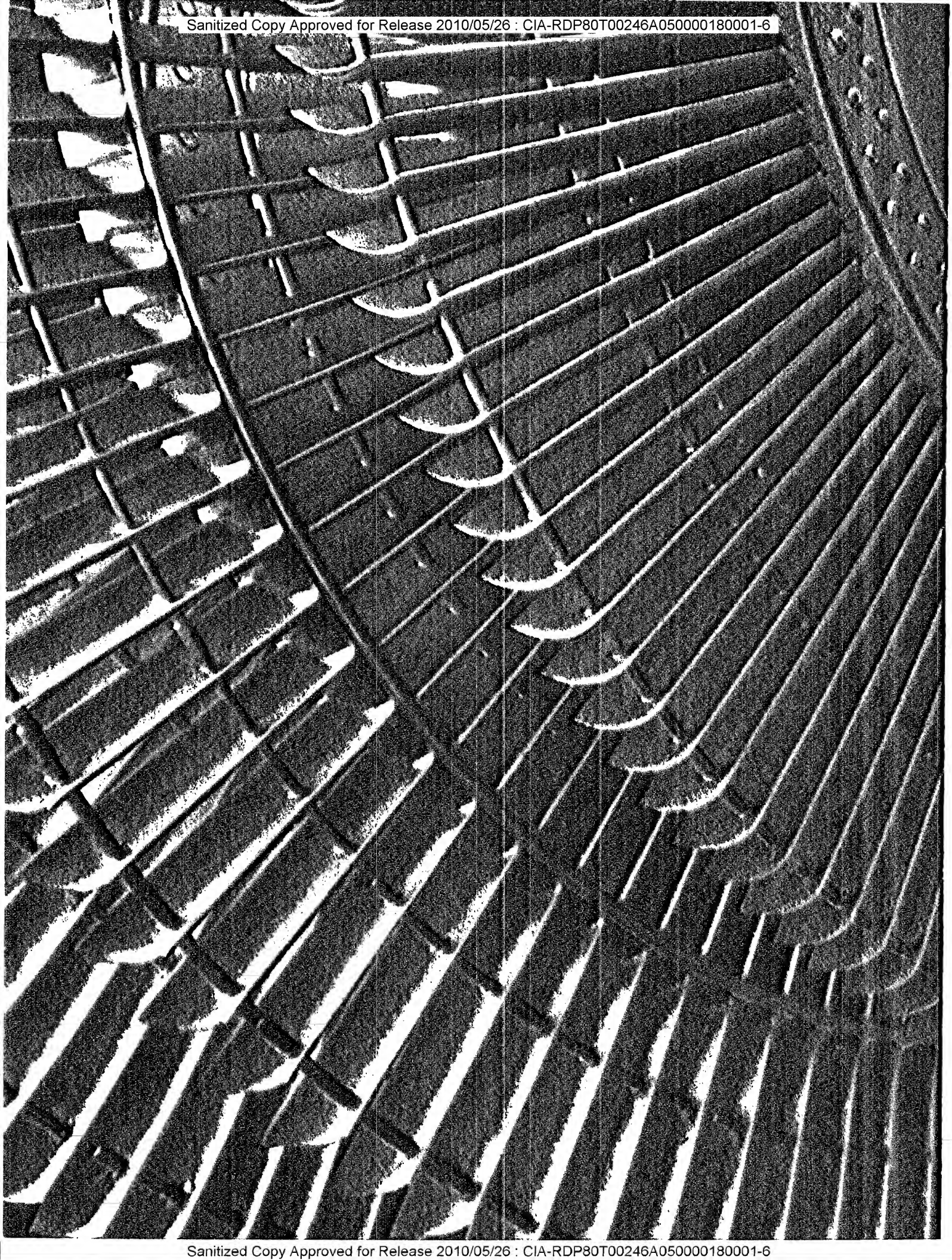
For many countries their foreign trade is of vital importance. In several countries, whole branches of industry and agriculture produce entirely for export (e.g., the watch industry of Switzerland, the timber and paper industry of Finland, the petroleum wells of the Near and Middle East, the coffee plantations of Brazil), and almost all branches of industry export a certain percentage of their products.

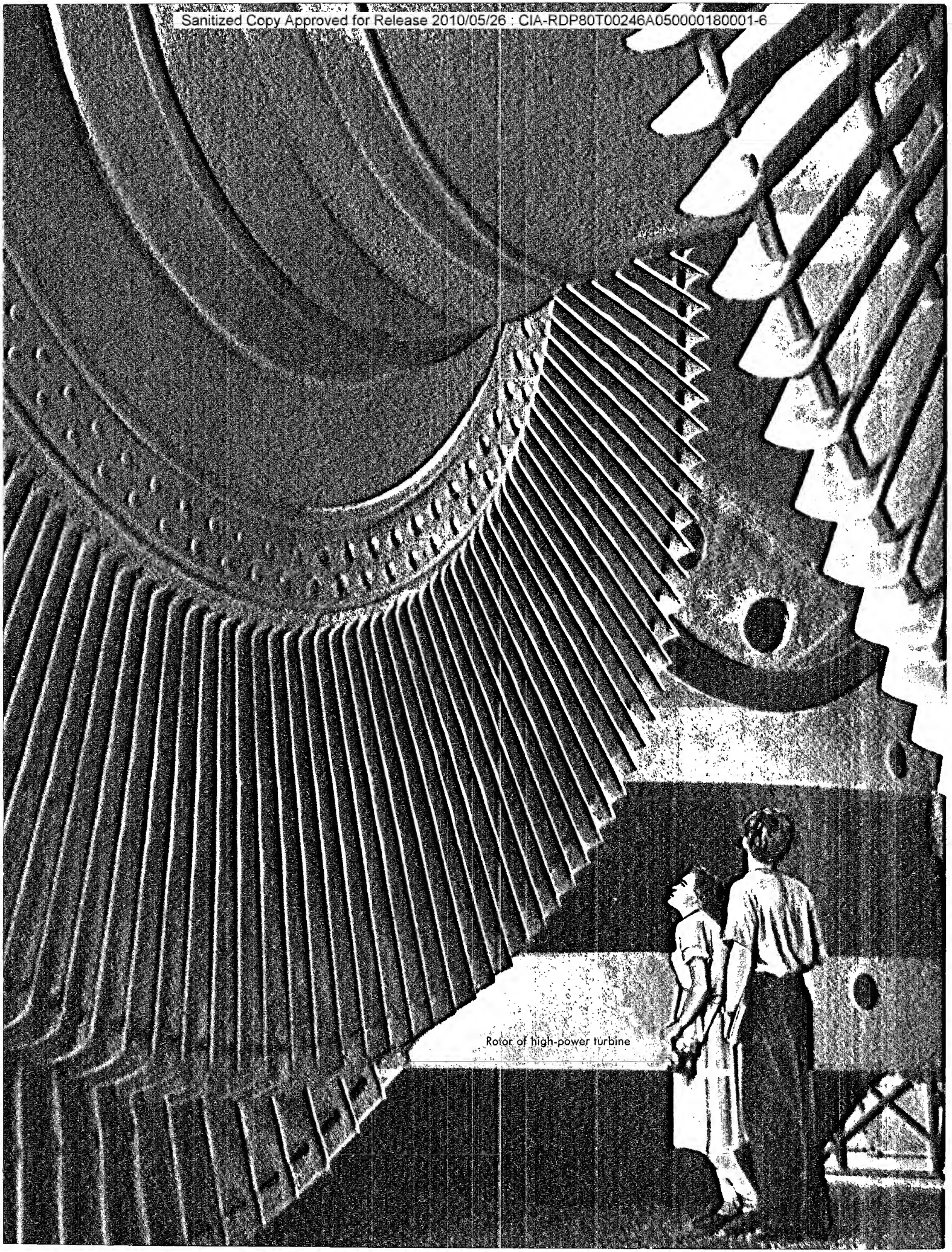
Export provides employment for many millions of workers. The majority of countries highly developed economically depend to a great extent on the import of foodstuffs and industrial raw materials (e. g., Britain, Federative Republic of Germany, Belgium), as the demands of the population and industry cannot be covered by home production of these items. Countries weakly developed economically are forced to import industrial goods in considerable quantities. Besides the fact that many countries are forced to take part in world trade through economic necessity, foreign trade itself is profitable to the trading parties concerned as it promotes international division of labour.



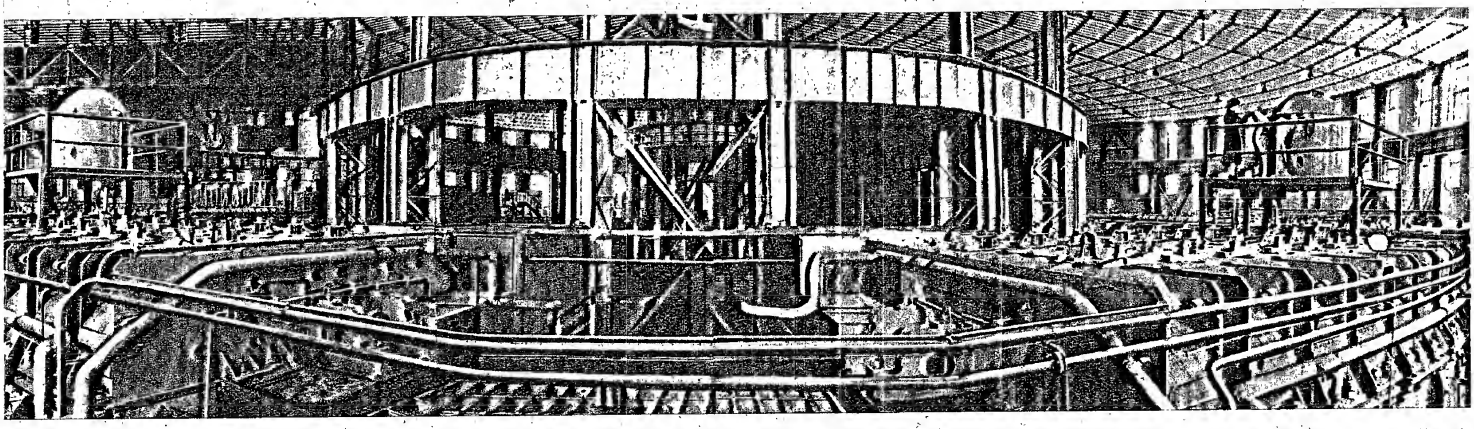
International Economic Conference, Moscow, April 1952







Rotor of high-power turbine



Soviet scientists created this gigantic atomic machine-synchrophasotron. The particles are accelerated in it to 10 milliards electron-volts. The annular magnet of the synchrophasotron weighs 36 thousand tons, while its diameter is nearly 60 metres. This unique machine was handed over by the Soviet Government gratis to the United Institute of Nuclear Research — an International organization comprising 12 member-states

As many countries are greatly interested in world trade its state is reflected in the relations existing between the parties concerned: the brisker and freer the trade-the better the relations between the partners.

World trade in which people in all walks of life are directly or indirectly involved, creates favourable conditions for establishing contacts between people of the most varied political views. Such contacts based as they are on business relations permit the persons concerned to get to know each other intimately and to value each other. Increasing such human contacts is the most effective way of creating an atmosphere of mutual trust among persons independent of whether they live in a socialist or capitalist society. It follows then that extended trade relations make for better understanding, thus helping to solve debatable issues by peaceful means.

The history of international relations after World War II, shows that the development of economic relations between the capitalist and the socialist countries played no small role in the weakening of international tension.

The Moscow Economic Conference of 1952 in which business representatives of 49 countries took part served as an impetus to the development of international trade, especially trade between East and West.

Soviet foreign trade in 1952 totalled 20.8 billion roubles. In 1957 it reached 33 billion, i.e., it increased by over 58%. There was likewise an increase in the bulk of foreign trade and in the number of trade partners in China and other countries of People's Democracies.

The development of trade was accompanied by the strengthening and extension of contacts between the business men of socialist and capitalist countries, personal contacts included.

Press reports on the successful development of business relations, on the visits of various delegations, on the meetings of business men, etc., have served to spread the ideas of peaceful co-operation and have thus helped to relax international tension.

International tension has increased of late. Certain individuals in the West take this as an argument in favour of tightening discrimination barriers in trade between the socialist and the capitalist countries. There is no doubt that these persons are more interested in the artificial increase of international tension rather than in its abatement.

In order to remove obstacles to world trade and, consequently, to extend economic co-operation, there should be frank exchange of opinions between the representatives of every country in the world within the framework of so authoritative an organization as the U.N.O.

The Soviet Union has moved at the XI Session of the U.N.O. General Assembly that there be called a World Economic Conference to which all countries, whether members of the U.N.O. or not, should be invited.

A World Economic Conference, through business discussion of economic problems facing the world, could very well repulse such elements that strive to build an impenetrable wall across the path of economic co-operation of the peoples of all the world, and could remove the obstacles created by the West at the height of the "cold war".

Besides the question of lifting discrimination barriers in international trade a World Economic Conference could very well tackle such questions as the creation of a World Trade Organization, international economic co-operation with the aim of creating independent national economics in the underdeveloped countries, international credit and finance problems.

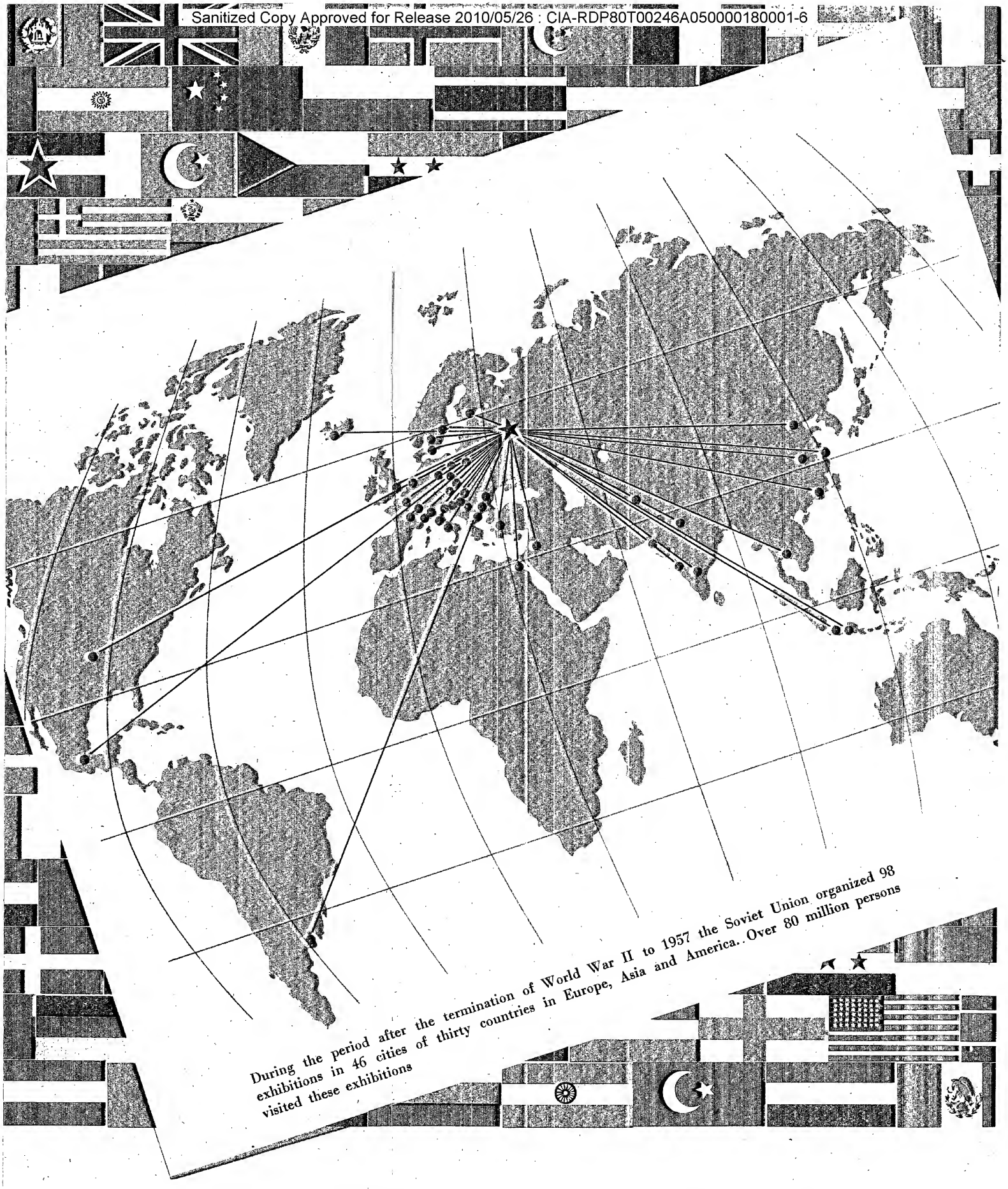
The Soviet Government has advanced new suggestions supplementing the draft of the "All-European Agreement on Economic Co-operation", through the Soviet delegation at the XI Session of the European Economic Commission of U.N.O.

These new suggestions provide for co-operation in building major hydropower plants and the development of the European fuel resources, and also the signing of agreements by all the interested European countries regarding measures for facilitating trade among them and for giving mutual economic and financial aid with a view of helping further economic development.

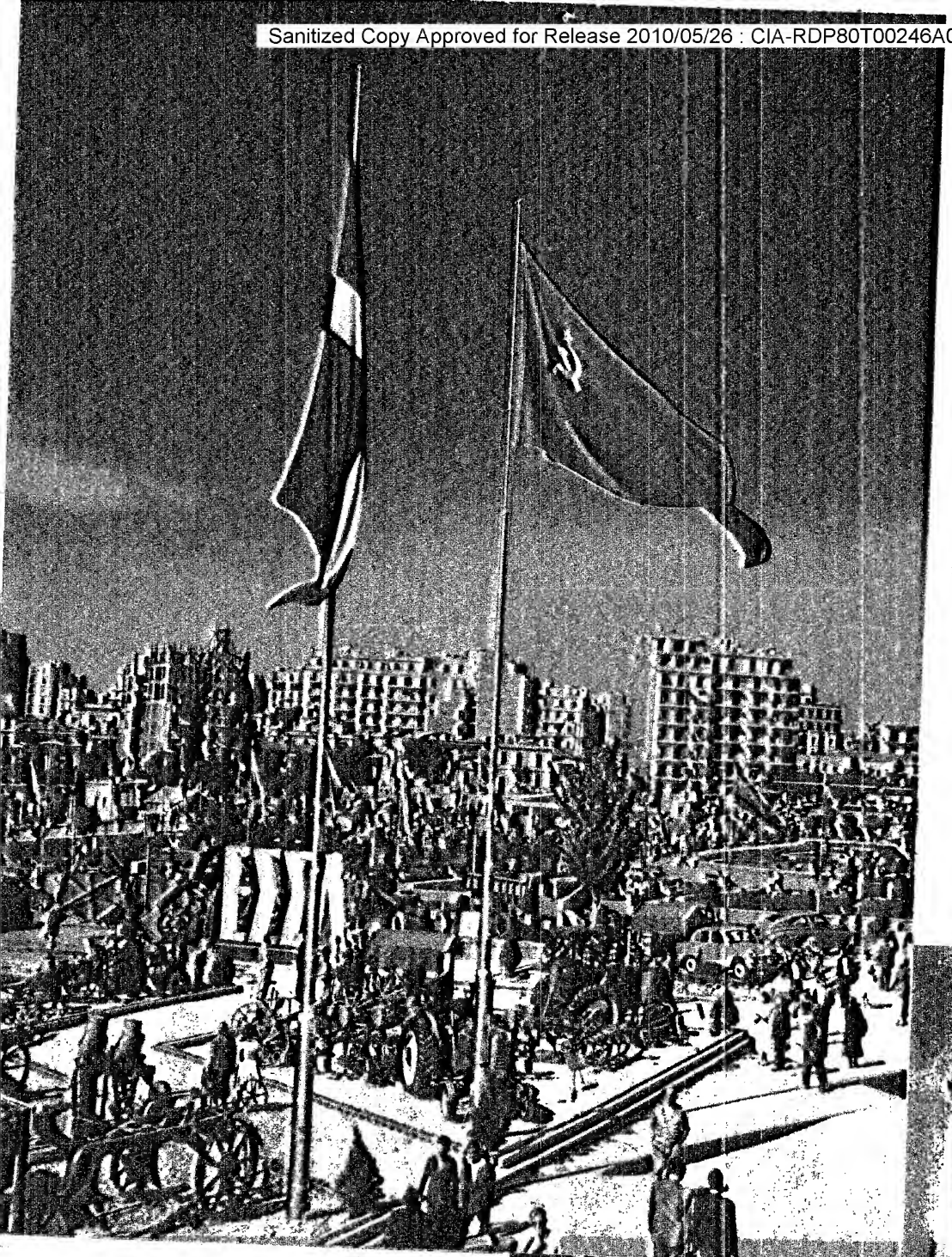
All the steps taken by the Soviet Government above described are aimed at widening international economic co-operation and thus relaxing political tension, and are yet another manifestation of the goodwill of the Soviet Government in the sphere of international relations.

All measures taken by the Soviet Government to develop wide economic co-operation, the principles of equality and mutual advantage which the Soviet Union adheres to in its dealings with other countries, its readiness to develop trade and economic relations with foreign states are proof that the peoples of the Soviet Union wish to live in peace and foster friendly relations with other nations.

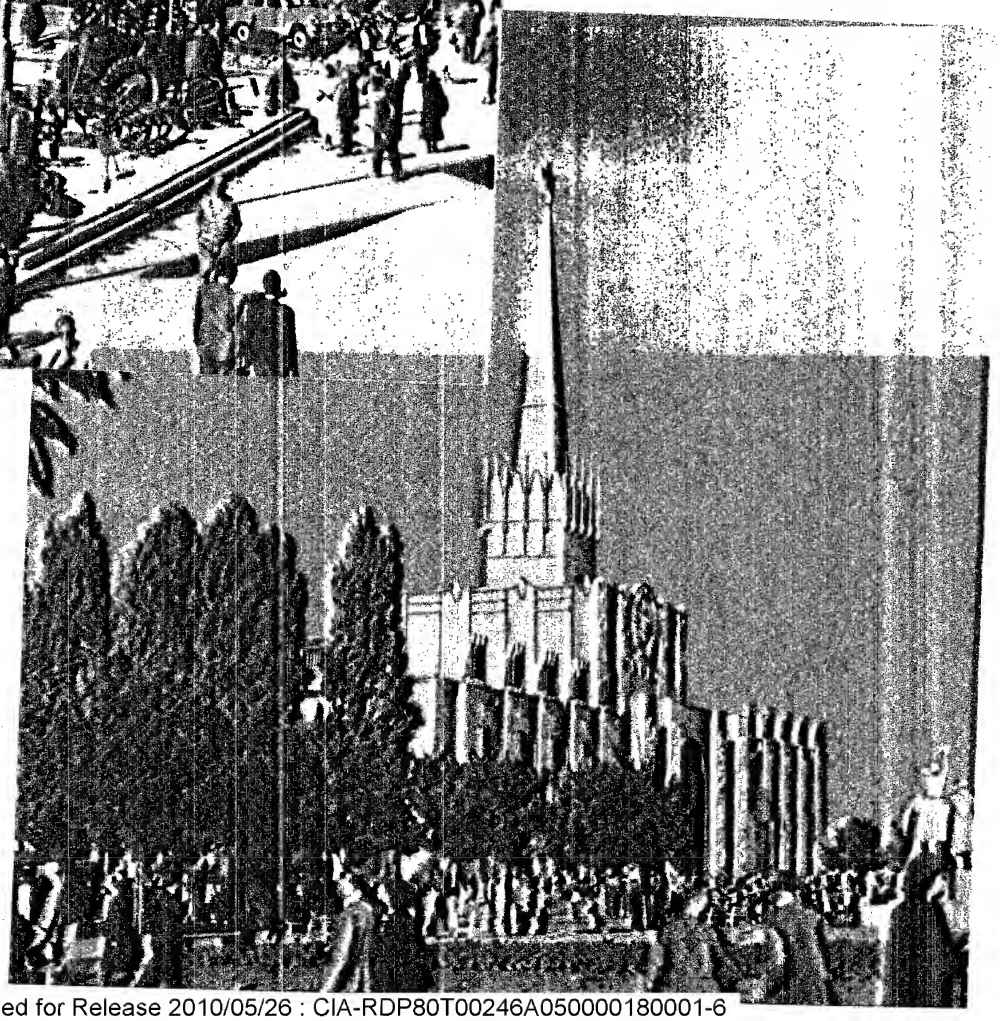
The present publication is intended for foreign business men. Its aim is to advertise Soviet machinery, equipment and other goods exported by Soviet foreign trade organizations. The All-Union Chamber of Commerce by publishing it hopes to contribute thereby to the development of Soviet foreign trade and to the strengthening of friendship and co-operation with all nations.



The U.S.S.R. Chamber of Commerce rendered assistance to organizations and firms of foreign countries in arranging and organizing industrial and specialized shows in the U.S.S.R. During the post-war period, 30 foreign shows have been organized in the U.S.S.R.



Soviet machine-construction products at the International Fair, Salonika, Greece, 1956



Near the Soviet Pavilion, Leipzig

"ROCKET" — Passenger Motor Ship with Underwater Wings

Speed is the main factor determining the development of modern transportation, including water transport.

Beginning with the second half of the 1957 season, the passenger motor ship "Rocket" has been put into regular service on the Volga river passenger line. It develops a speed of 60 to 70 km per hr and was built at the "Krasnoye Sormovo" Yards. This exceptionally high speed is due to its slightly-immersed efficient employment of the engine power, as well as for high hydrodynamic performance.

The design of the wings ensures the stability of the ship.

All mechanisms are mounted on shock-absorbers to decrease noise and vibration. The main engine controls are brought out into the wheelhouse.

The motor ship "Rocket" is economical in operation and possesses high manoeuvrability. When travelling on the wings, almost no wave generation is evident.

The motor ship "Rocket" has the following specifications:

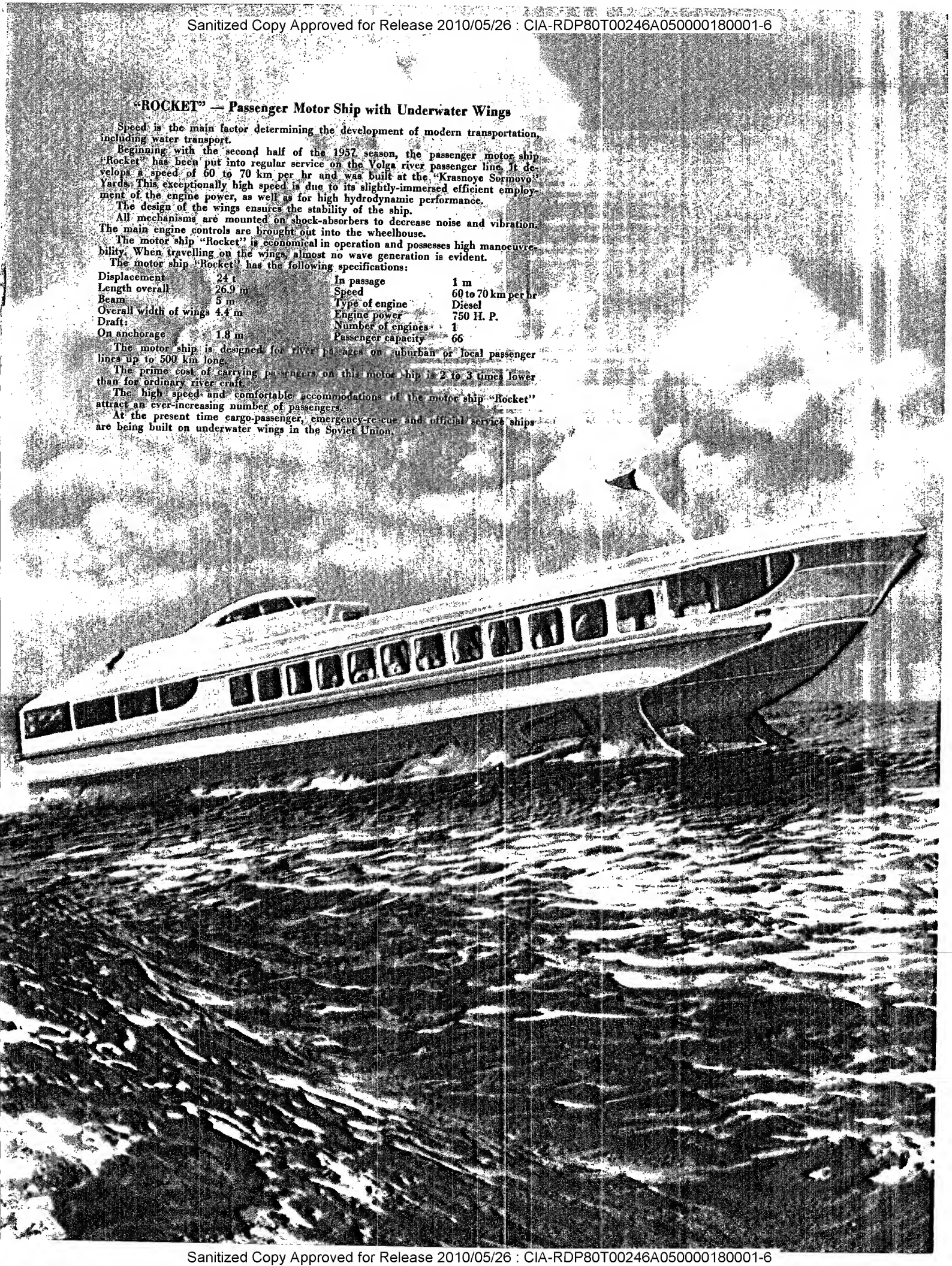
Displacement	24 t	In passage	1 m
Length overall	26.9 m	Speed	60 to 70 km per hr
Beam	5 m	Type of engine	Diesel
Overall width of wings	4.4 m	Engine power	750 H. P.
Draft:		Number of engines	1
On anchorage	1.8 m	Passenger capacity	66

The motor ship is designed for river passages on suburban or local passenger lines up to 500 km long.

The prime cost of carrying passengers on this motor ship is 2 to 3 times lower than for ordinary river craft.

The high speed and comfortable accommodations of the motor ship "Rocket" attract an ever-increasing number of passengers.

At the present time cargo-passenger, emergency-rescue and official service ships are being built on underwater wings in the Soviet Union.



TECHNICAL CO-OPERATION IN CONSTRUCTING COMPLETE INDUSTRIAL ENTERPRISES ABROAD

N. MELNIKOV

Note. The plants and structures illustrated here (pp. 15–44) have been designed and built during the post-war period with the aid of the Soviet Union. They are furnished with up-to-date equipment constructed in the Soviet Union

The high level of industrial development in the U.S.S.R. and its wide experience in establishing new industries allow it to develop extensive economic ties and render over-all technical assistance of foreign countries in the construction of industrial and other enterprises.

Technical assistance covers prospecting, designing, supplying equipment for complete plants, erecting, adjusting and putting the delivered equipment into operation, training personnel either directly on the spot or in the Soviet Union.

As far back as during the pre-war period, the Soviet Union, through "Technoexport", which was founded in 1932, helped to construct light, food and other industrial enterprises in Turkey, Iran, China and Mongolia.

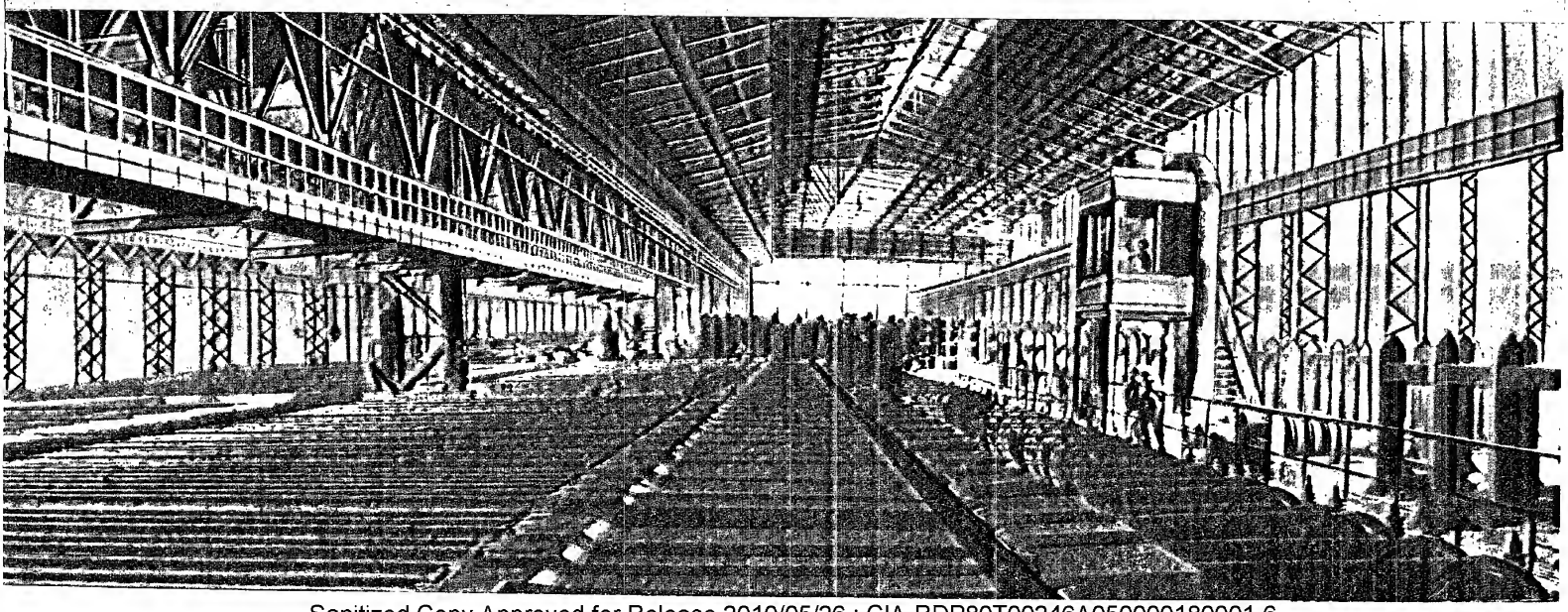
In the past ten years, "Technoexport" has greatly extended the scale of its activities in this field. It undertook obligations to render technical aid and construct abroad more than 500 industrial and other enterprises, and also to set up about 170 installations and engineering projects of various kinds.

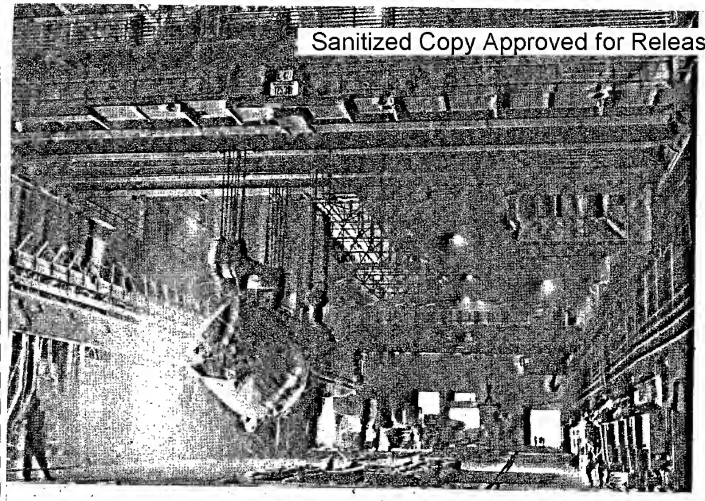
The Soviet Union fulfils oders for the supply of equipment for research into and the application of atomic energy for peaceful purposes. Soviet scientists as well as machine builders readily share their experience and give technical assistance to their foreign friends in this important and promising development.

Technical aid in the development of various branches of national economy is being extended to the Chinese People's Republic, Albania, Afghanistan, Burma, Bulgaria, Hungary, the Democratic Republic of Viet-Nam, the German Democratic Republic, Egypt, India, Indonesia, Iran, the Korean People's Democratic Republic, Poland, Rumania, Syria, and Czechoslovakia.

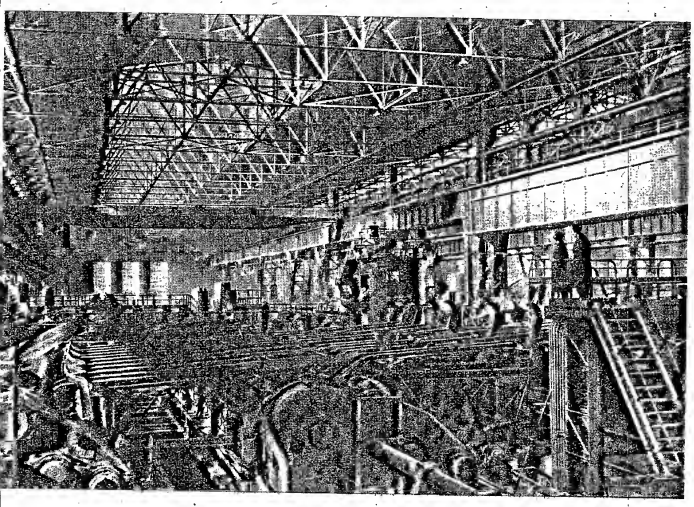
The Soviet Union is rendering foreign countries all-round assistance in the building of huge thermal and hydropower stations, metallurgical, chemical, machine-building and other heavy industry enterprises, enterprises of the light and food industries, the chemical and pharmaceutical industry, the building materials industry, and so forth. This is illustrated by the following examples.

Rail and structural steel mill at Anshang, China

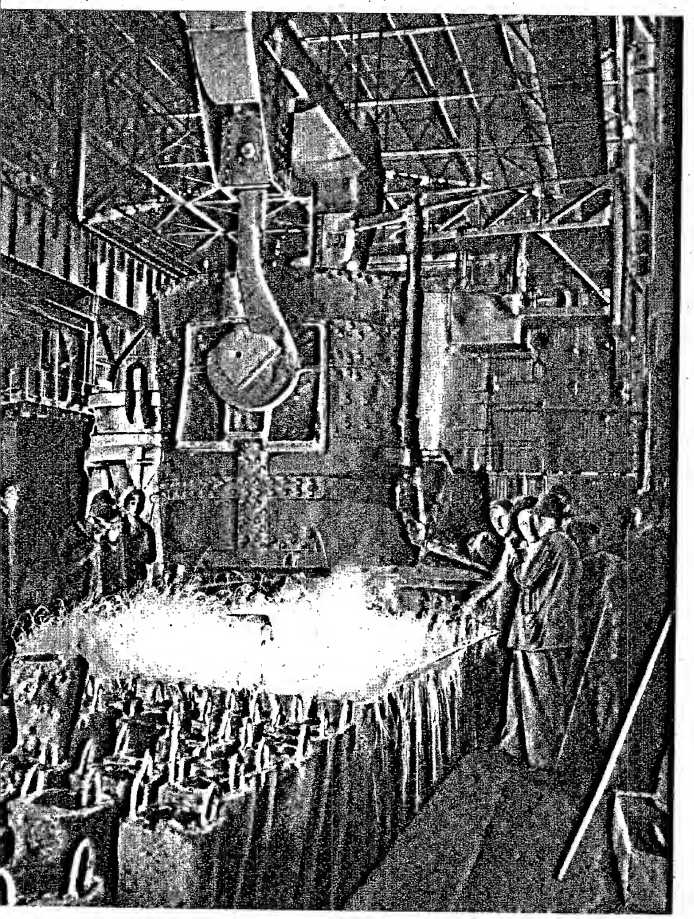




Open-hearth department, steel plant "Nova Guta", Poland



Tube mill "Stiefel", steel plant "Romani", Rumania



Open-hearth department, V. I. Lenin steel plant, Bulgaria

FERROUS METALLURGY

Technical progress in Soviet ferrous metallurgy is proceeding along the path of general expansion of production and intensification of technological processes, the maximum and most rational utilization of raw materiols, fuel and equipment, and the further mechanization and automation of production processes. Success has been achieved in employing oxygen for steel smelting in open-hearth and electric furnaces and for smelting blast-furnace ferro-alloys. The smelting of steel in converters with the application of oxygen has been organized on an industrial scale. Further work has been done to develop the use of heat-resistant refractory linings, to master the process of continuous steel teeming and use vacuum for steel teeming, and also to automotize the production of pig iron, steel, rolled stock pipes coke and by-products, and refractories.

The Soviet Union's achievements in ferrous metallurgy and other industries are being made available to foreign Customers.

With the help of the Soviet Union, 31 ferrous metallurgy enterprises have been built or are being designed and constructed in foreign countries. Of that number, 15 operate on a complete metollurgical cycle and their rated production capacity exceeds 10 million tons of steel, more than 8 million tons of rolled stock and the corresponding quantity of pig iron.

The Anshon iron and steel works (Chinese People's Republic) may be mentioned os one of the largest metallurgical enterprises. Its roted capacity is 5.5 million tons of steel per year and the corresponding quantity of pig iron and rolled-stock.

The works is fitted with the latest high-productive equipment designed and manufactured in the Soviet Union. It includes a powerful "140" pipe rolling mill with an onnual capacity of 60 000 tons of pipes, a rail and structural steel mill with a capacity of up to 500 000 tons of rails and lorge cross-section beams, etc.

The construction of an iron and steel works in Bhilai, India, is in full swing. It is being built with Soviet ossistance and fitted with the latest Soviet-made equipment. The works will produce a million tons of steel ingots annuolly. Facilities are provided for expanding its production capacity up to a million tons of rolled stock and 300 000 tons of commercial pig iron per year.

The Soviet Union is helping the Polish People's Republic to develop its ferrous metallurgy.

The Lenin iron and steel works at Guta is the largest of the ferrous metallurgy enterprises that are being constructed in Poland with the assistance of the Soviet Union. This works is designed to produce more than 3 million tons of steel per year and the corresponding quontity of rolled stock and pig iron.

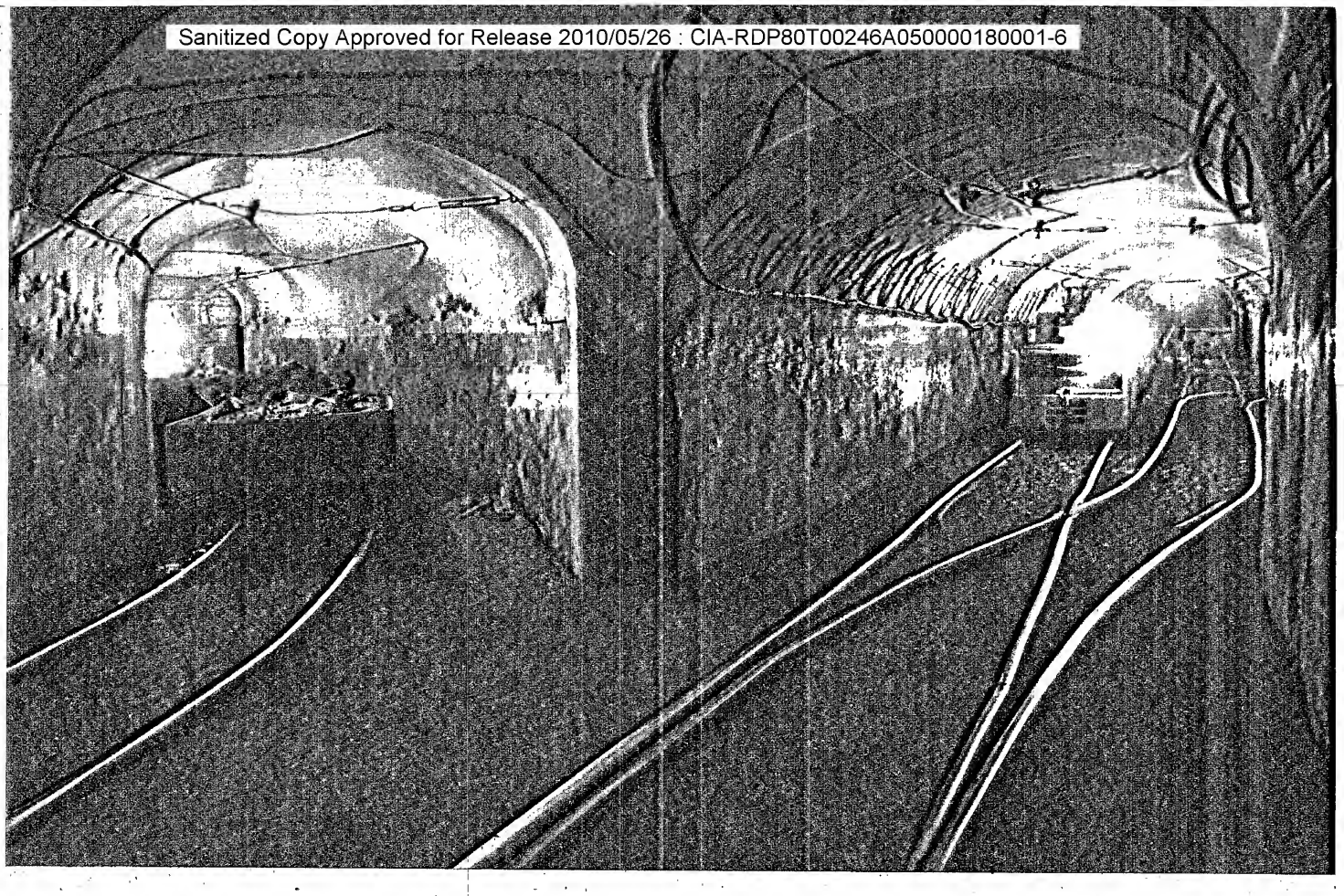
Bulgaria had no ferrous metallurgy of its own in the past, and its demand in ferrous metols wos met by imports.

With the aid of Soviet experts, large enough iron ore deposits were brought to light in Bulgoria to supply o metallurgical plant.

Today, Bulgorio is constructing an iron and steel works designed by Soviet experts. It will be equipped with Soviet-made machinery and will operate on a complete production cycle. It will put out over 200 000 tons of rolled stock onnually, and olso the corresponding quantity of pig iron ond steel.

The "Romani" iron and steel works in the Rumanian People's Republic has a high-copacity pipe rolling mill designed ond manufactured by the U.S.S.R. to roll pipes from 6 to 16 inches in diameter and produce up to 300 000 tons of piping annually.

The Soviet Union is helping to develop ferrous metallurgy by building metallurgical enterprises in the Chinese People's Republic, the Korean People's Democratic Republic, Hungary, Poland, and other countries.



NON-FERROUS METALLURGY

The technical and technological achievements in this industry in the Soviet Union are widely employed to provide technical assistance to foreign countries.

The U.S.S.R. is successfully producing metals for semi-conductors, thermionic valves and heat-resistant alloys; successes have also been achieved in the electrothermal processing of polimetal products and lead agglomerates, in automatizing the heat regime control of reverberatory and refining furnaces and in complex automation at concentration mills, etc.

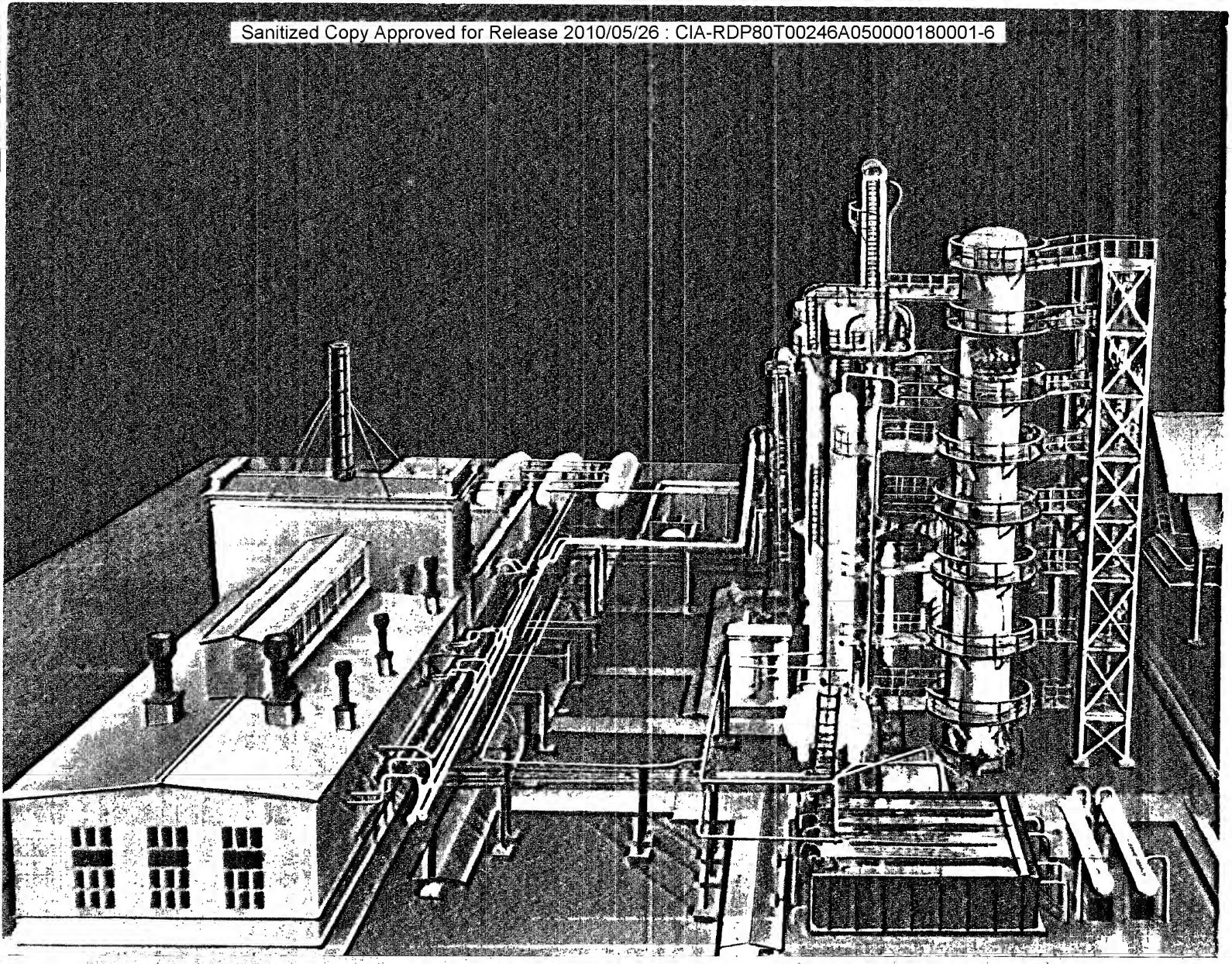
With Soviet assistance many countries have built or are designing and constructing 37 enterprises for the production of aluminium, tin, copper, lead, tungsten concentrates and other non-ferrous and rare metals.

COAL INDUSTRY

Complex equipment complete with shartwall cutter-loaders to ensure overall mechanization at the coal face has been successfully tested in the U.S.S.R. In the course of a single year, the level of mechanization in coal loading increased by 19 per cent, in rock and coal loading in the main level narrow course—by 13 per cent. Introduction of stripping methods without transport facilities and the use of powerful shovels continued at open workings.

"Technoexport" is using the achievements of the Soviet coal industry to help develop this industry abroad.

With the assistance of the Soviet Union the Chinese People's Republic, Poland, Bulgaria, Mongolia, and other countries have built or are designing and building 30 coal mining enterprises, including 19 coal-mines and quarries with an annual output capacity of over 30 million tons of coal, 8 coal breaking plants with a total annual output capacity of over 8 million tons of coal, combustible shale quarries with a productivity of over 200 million tons of shale per year, etc.

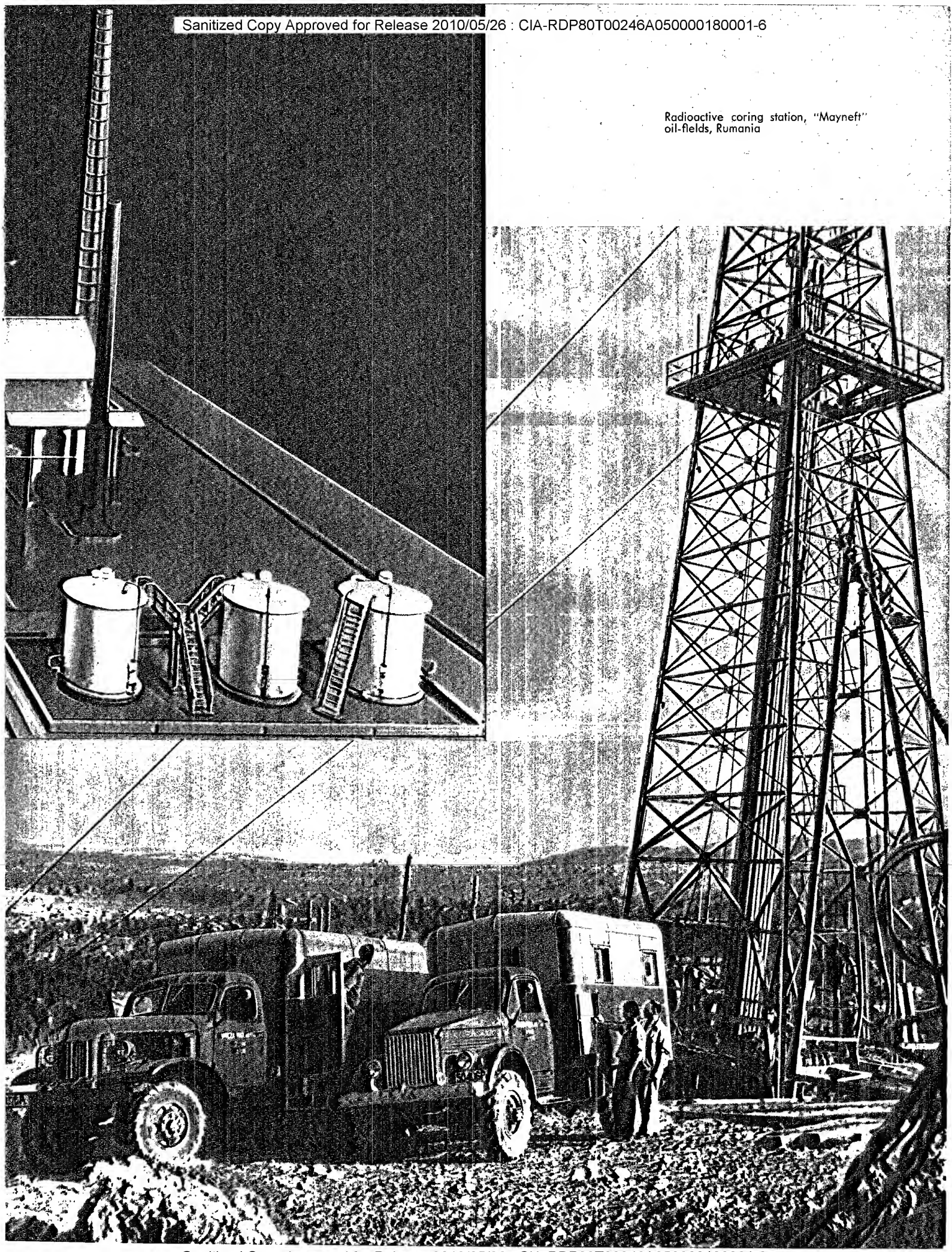


OIL INDUSTRY

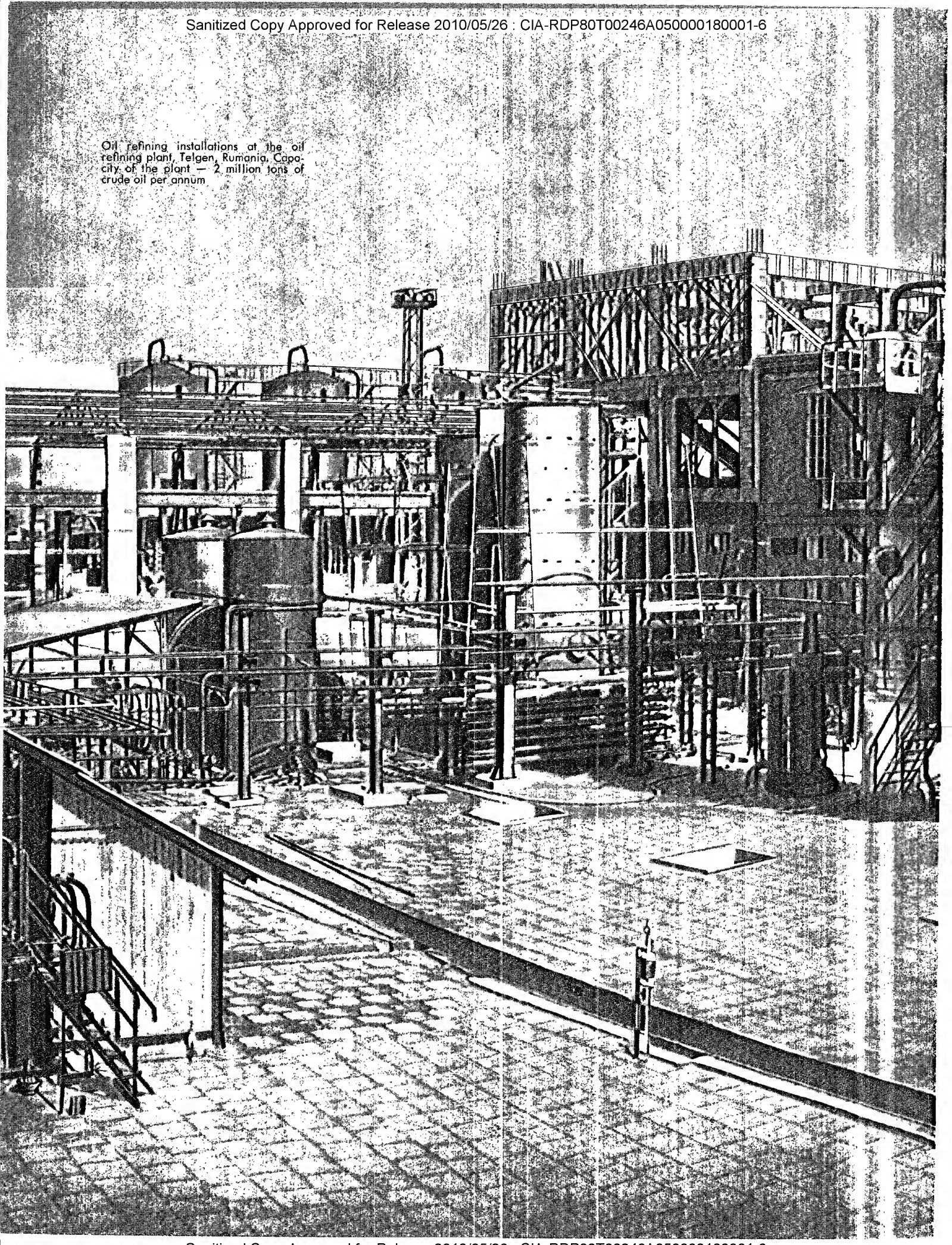
The high level achieved by the Soviet oil extracting and refining industries and the machine-building industry which is putting out modern high-productive equipment is enabling "Technoexport" to undertake to provide foreign countries with all-round assistance in creating and developing oil extracting and refining industries.

Recently commissioned projects or projects still under construction in various countries include 10 oil industry enterprises. Of these five are large oil refineries, and the others—plants for the production of synthetic liquid fuels from shale tar, works for the production of oil piping, and other industrial units which are being equipped with the latest Soviet-made machinery.

Wide-scale technical assistance is being given to a number of foreign countries to prospect for oil, gas and bitumen.



Radioactive coring station, "Mayneft" oil-fields, Rumania



Oil refining installations at the oil refining plant, Telgen, Rumania. Capacity of the plant — 2 million tons of crude oil per annum

CHEMICAL INDUSTRY

In the U.S.S.R., great attention is paid to the development of the chemical industry. After the World War II, new high-capacity plants have been constructed and old ones have been restored and put into operation.

As the base for the production of mineral fertilizers for agriculture, the U.S.S.R. chemical industry puts out large quantities of nitrogen, potassium, phosphoric and other mixed mineral fertilizers.

Recently the U.S.S.R began to produce new kinds of fertilizers and toxic chemicals. Mercuran, an effective toxic chemical, is being produced on an industrial scale and is used for maize and other grain crops.

Output has been started of liquid ammonia fertilizers which were successfully tested in the spring of 1956. Superphosphate is now being produced by a continuous process, which eliminates labour consuming manual handling, and improves hygienic conditions and the quality of the product by cutting the time of aging by 25 per cent. Production has also been organized of granulated superphosphate which is being put out in large quantities. A new technological process is employed for the production of secondary superphosphate from apatite, precipite and ammophos.

The production of sulphuric acid has made considerable progress in the U.S.S.R. In 1940, the Soviet Union occupied the fourth place in the world for the production of sulphuric acid, but in 1956 it became the second largest producer after the U.S.A.

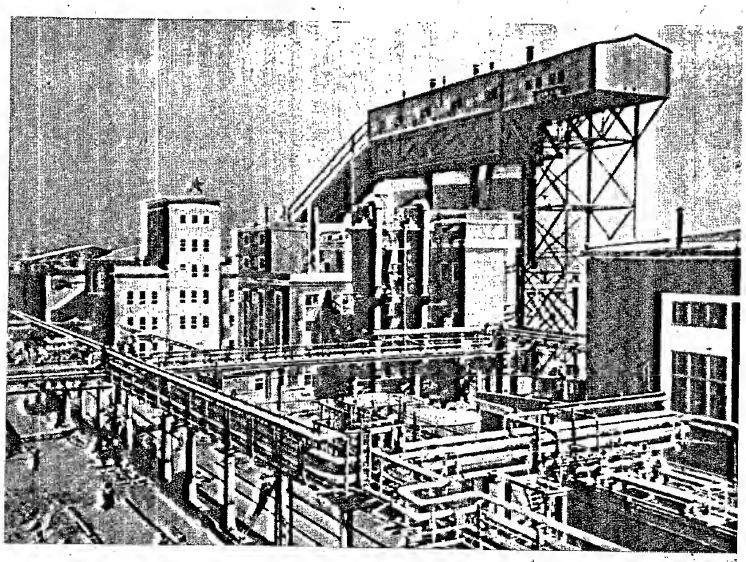
Synthetic rubber produced from oil and natural gases is of great practical importance. It is used for the manufacture of automobile tyres and other rubber products. The U.S.S.R. was the first country to organize the production of synthetic rubber, the output of which was organized in this country as far back as in 1928–1932. In the U. S. S. R. methods have been developed for producing new kinds of synthetic rubber with properties almost similar to those of natural rubber.

Under agreements "Technoexport" is rendering technical assistance to the Chinese People's Republic, the Korean People's Democratic Republic, the Democratic Republic of Viet-Nam, Poland, Rumania, Bulgaria and other countries in the construction of 37 chemical enterprises with a rated annual output capacity of about 800 000 tons of ammonia, over 450 000 tons of superphosphate, and a great variety of other chemical products.

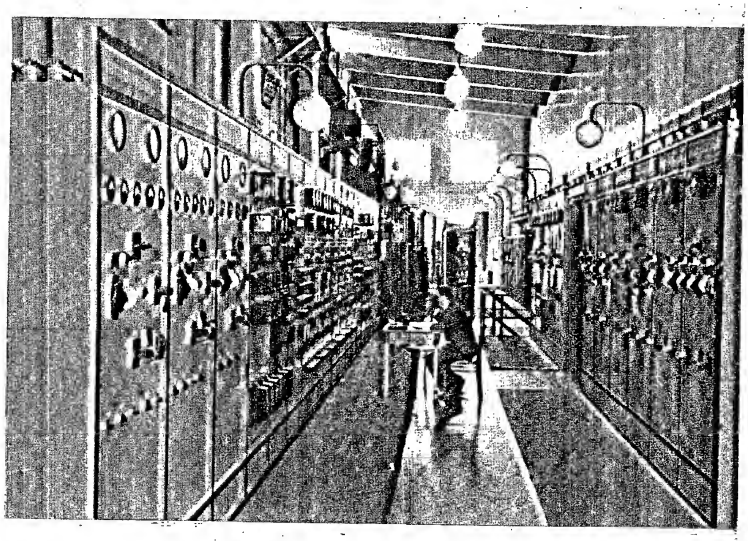
In Bulgaria, for example, a chemical works, designed by Soviet engineers and equipped with the latest Soviet machinery to produce 30 000 tons of ammonia and corresponding quantities of other chemical products per year, has been built at Dmitrovgrad. This works is now successfully operating. At present, its annual capacity is being extended.

Rumania is also receiving Soviet assistance in the construction of a huge chemical plant with a rated annual output capacity of up to 300 000 tons of ammonia.

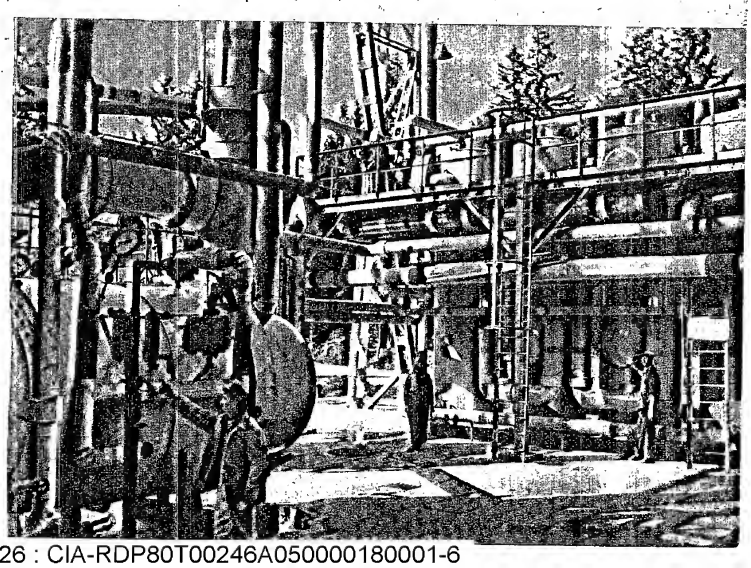
Soda plant, capacity 80 thousand tons of soda ash per annum, Bulgaria

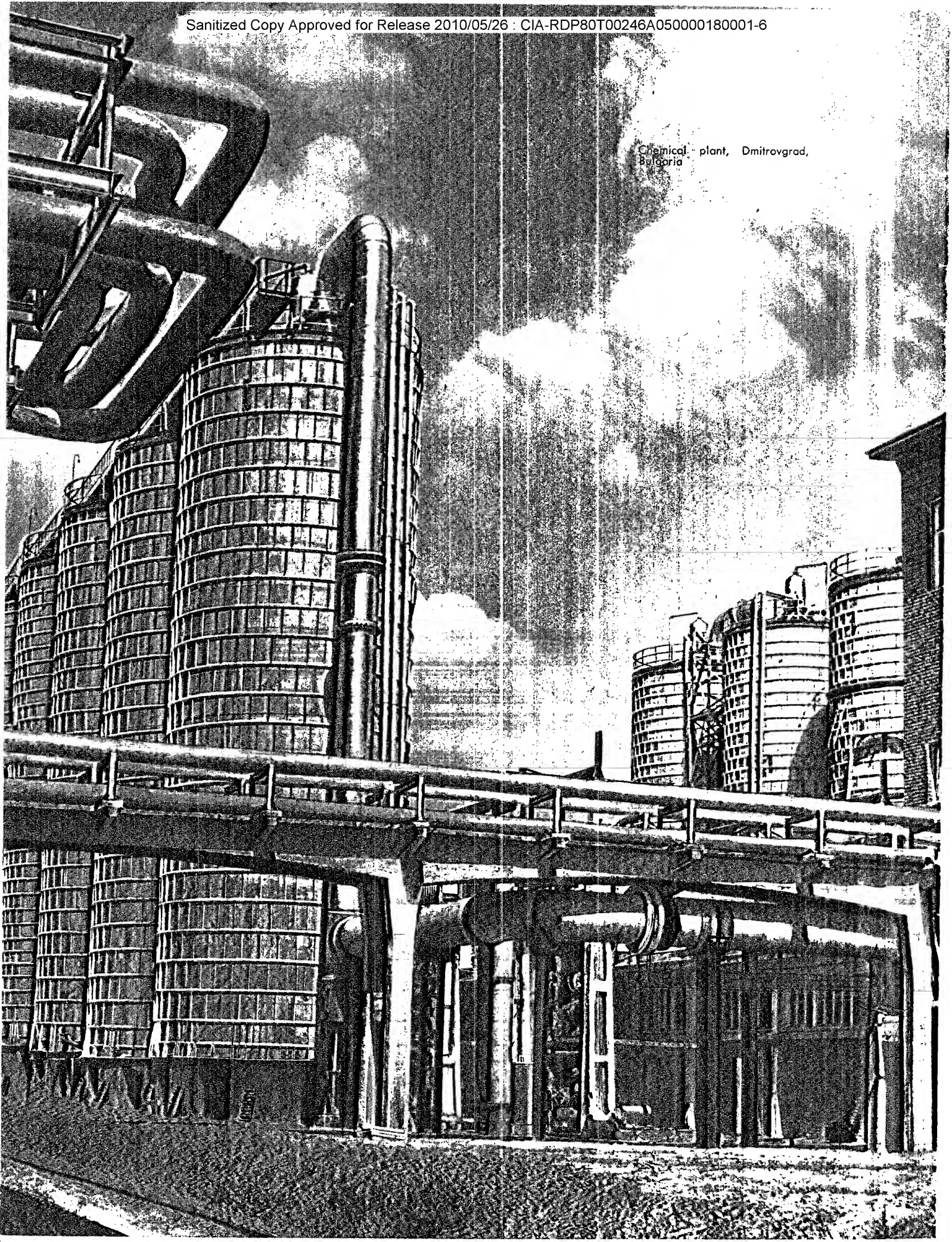


Mercury arc rectifier station, salt electrolysis department, Oswenzim, Poland

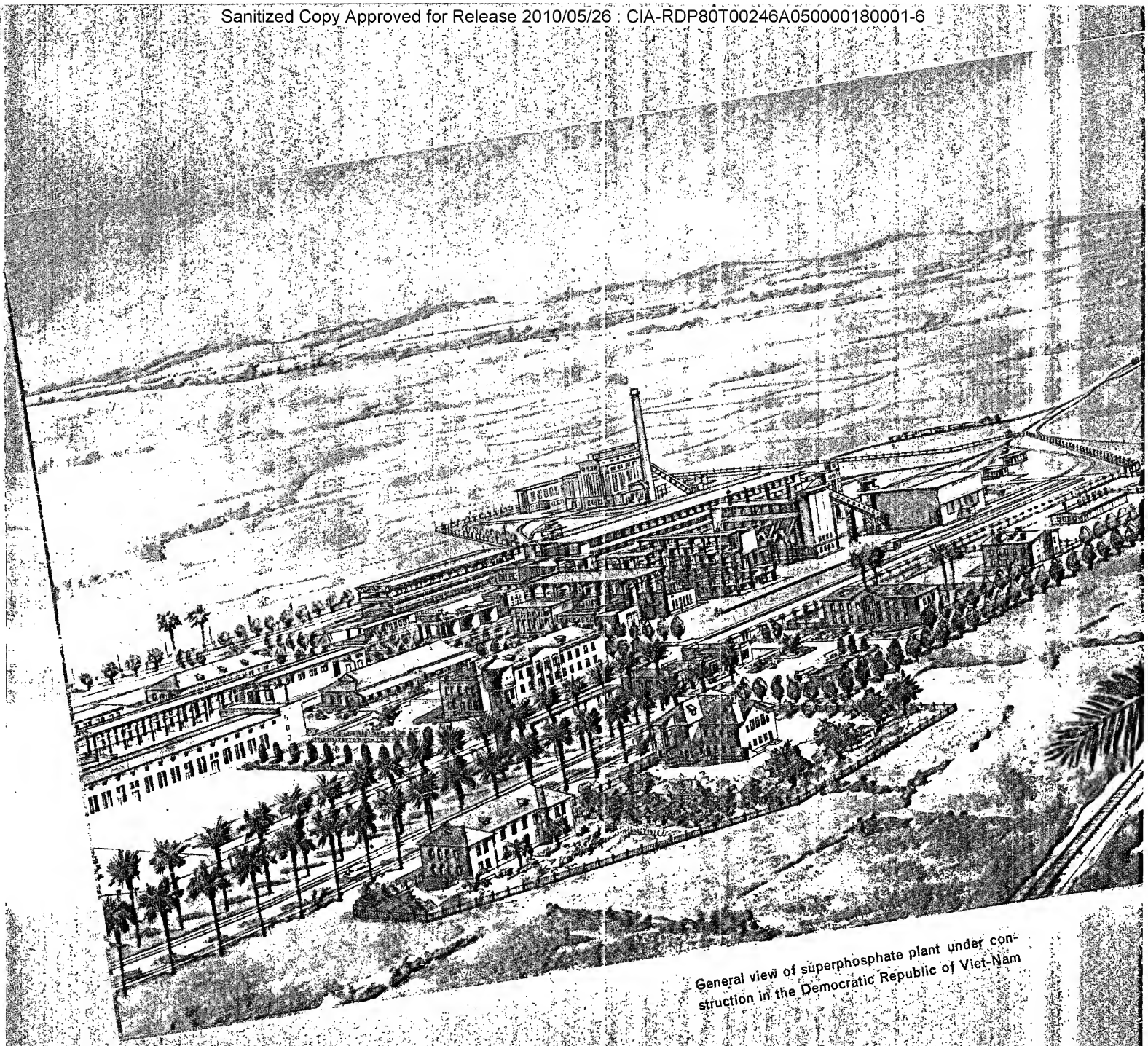


On the territory of the chemical plant, Victoria, Rumania

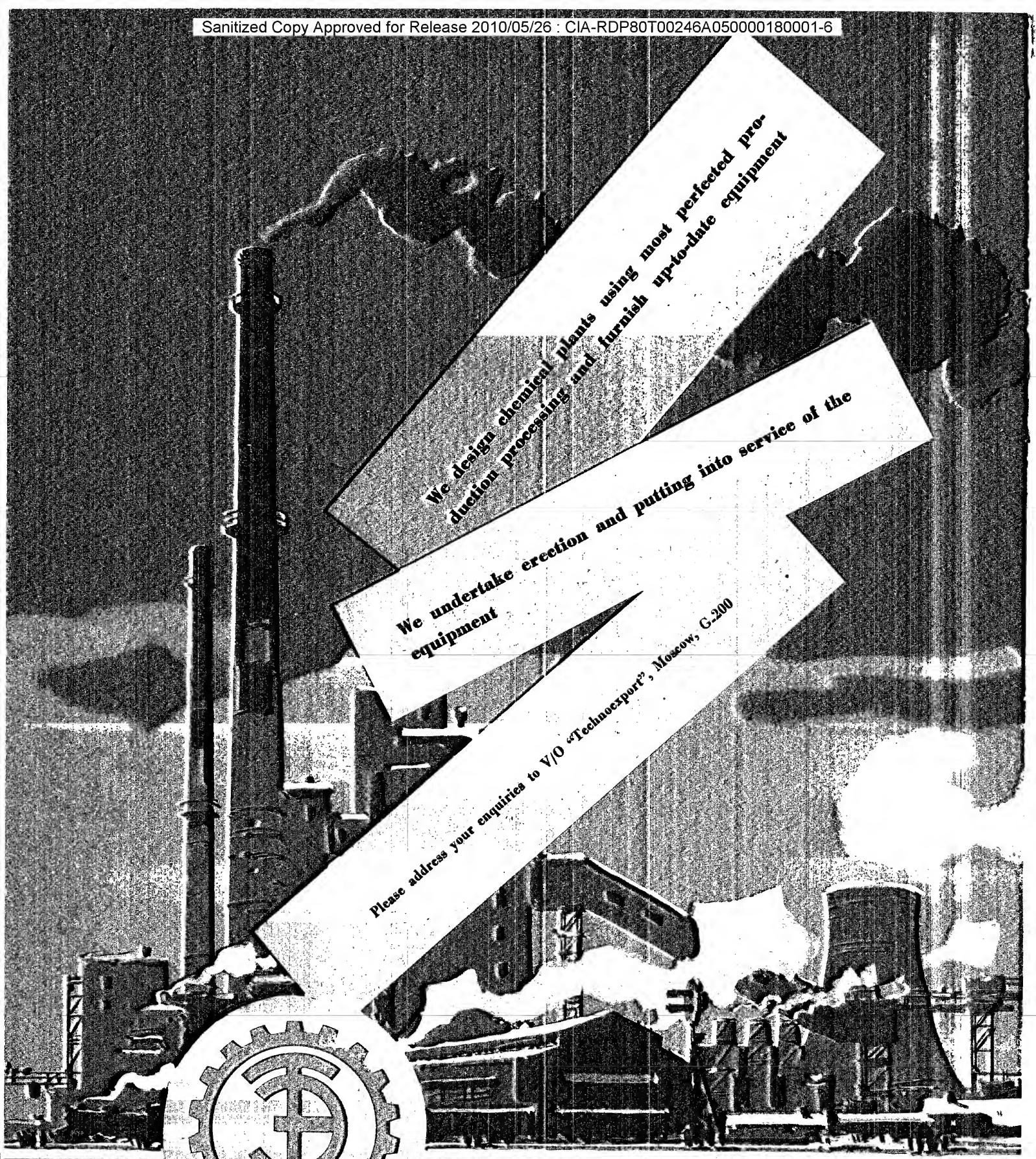




Chemical plant, Dmitrovgrad, Bulgaria



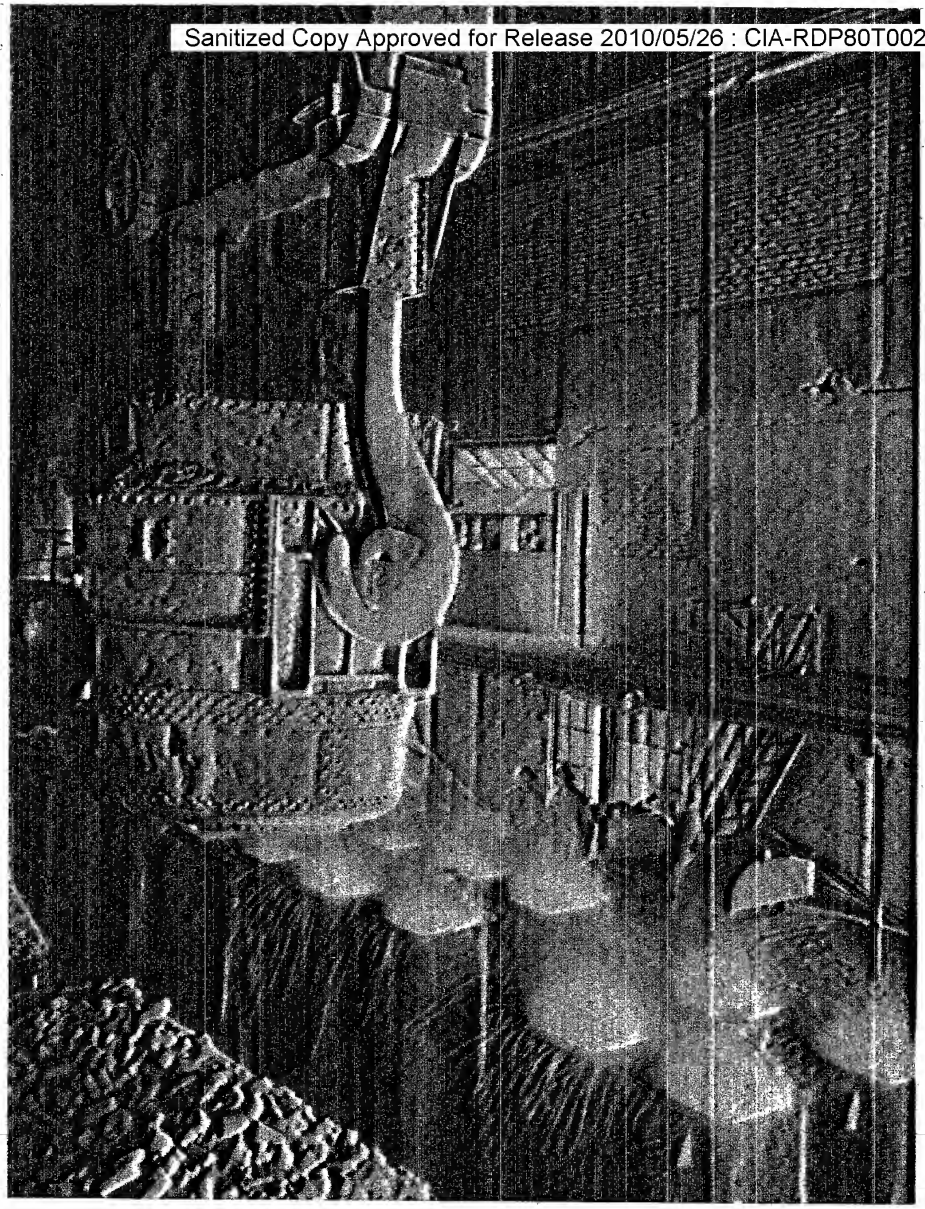
General view of superphosphate plant under construction in the Democratic Republic of Viet-Nam



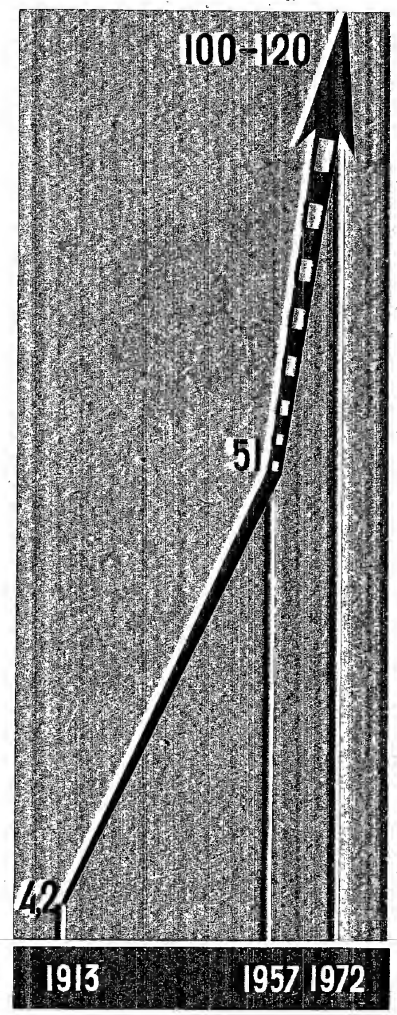
ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ

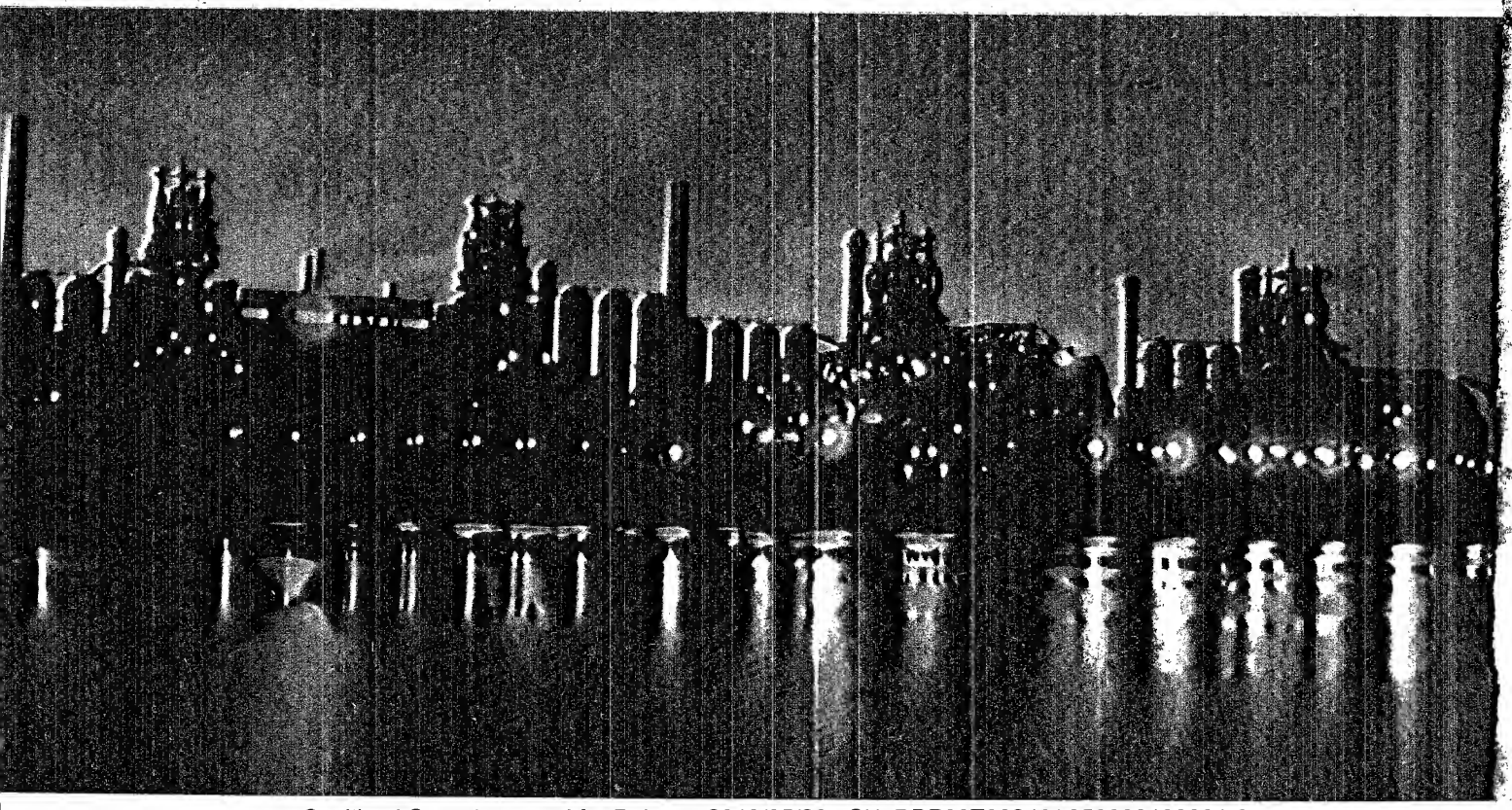
ТЕХНОЭКСПОРТ

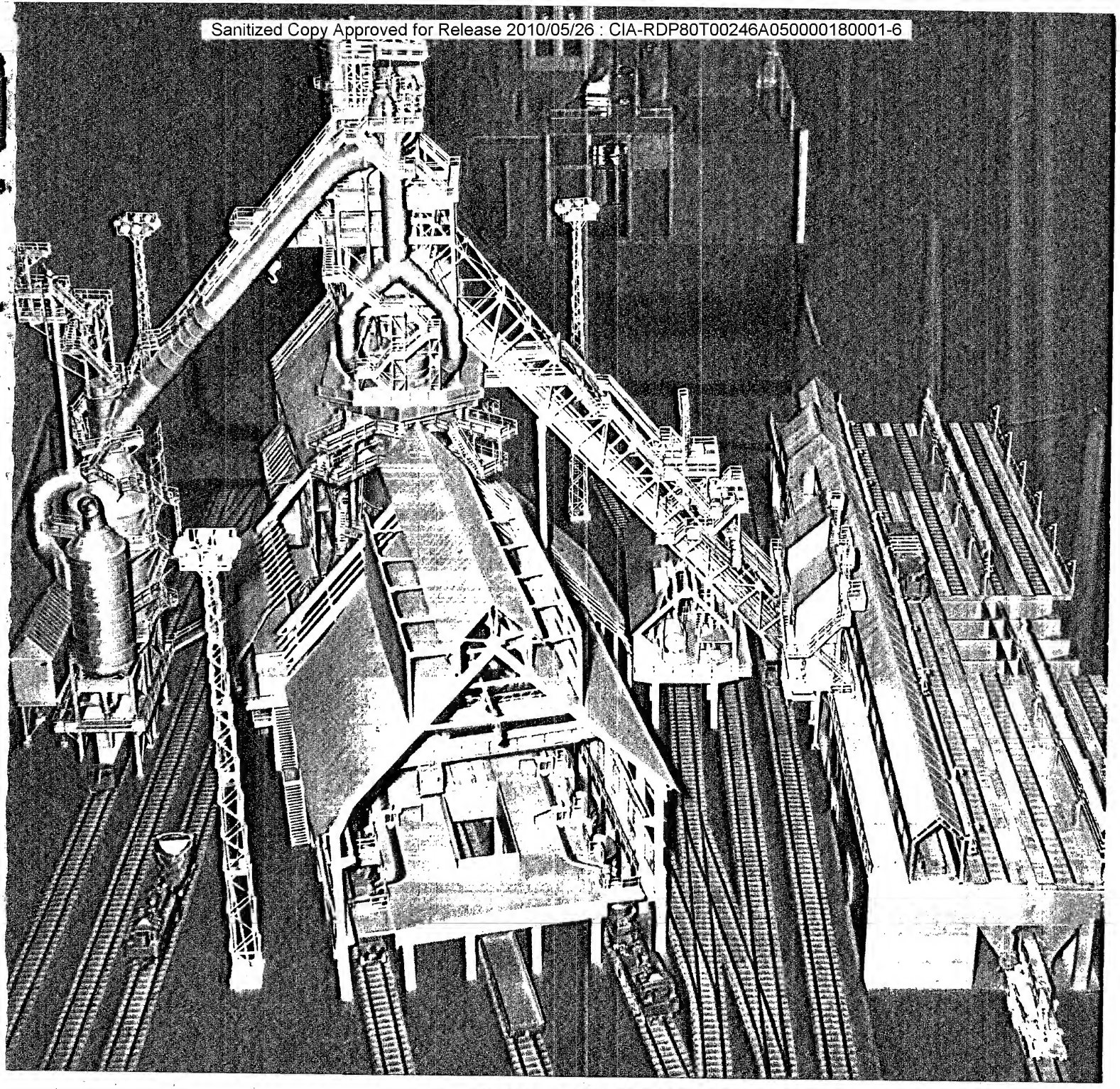
STEEL FOUNDERS



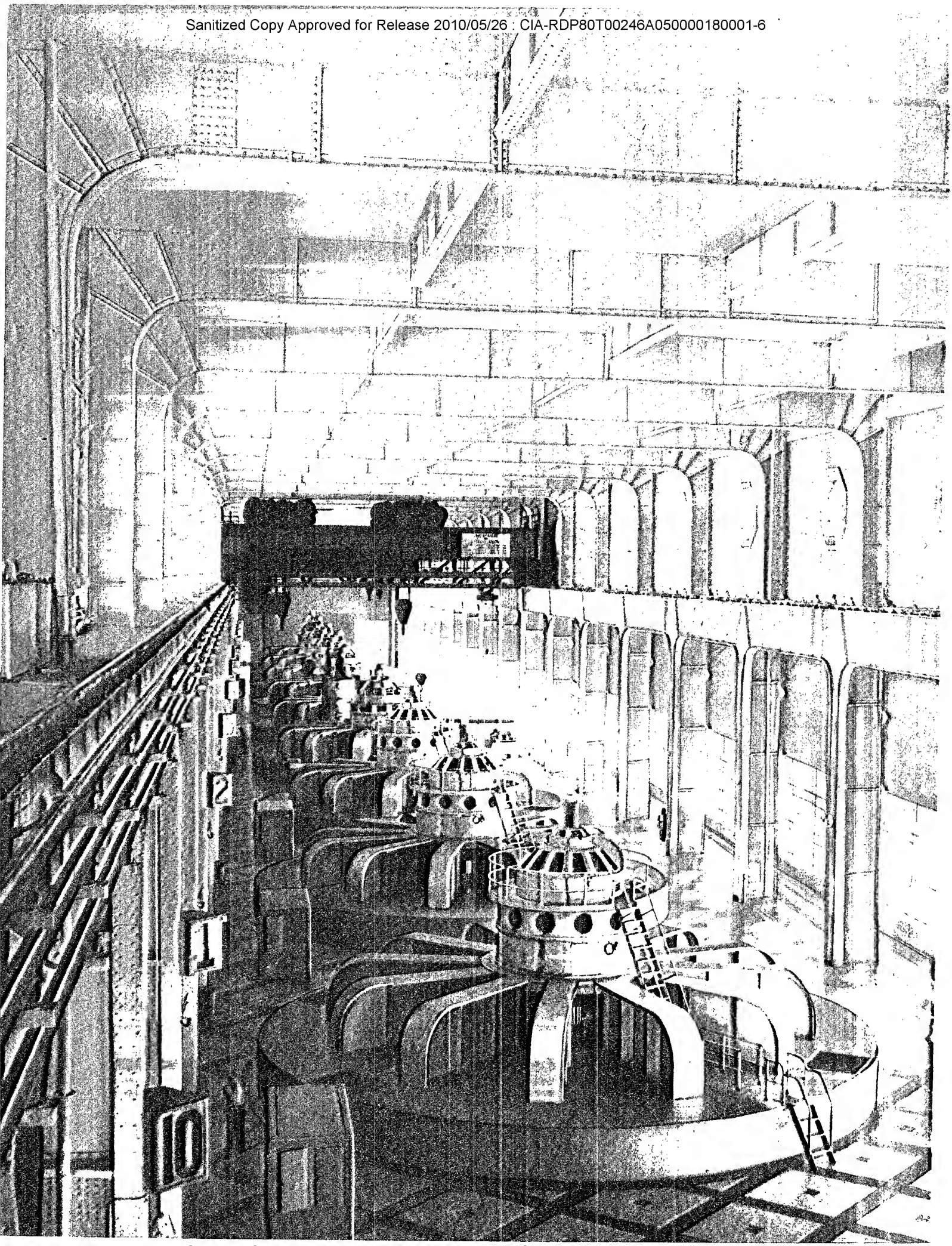
Growth of steel smelting in the U.S.S.R.
(in million tons)

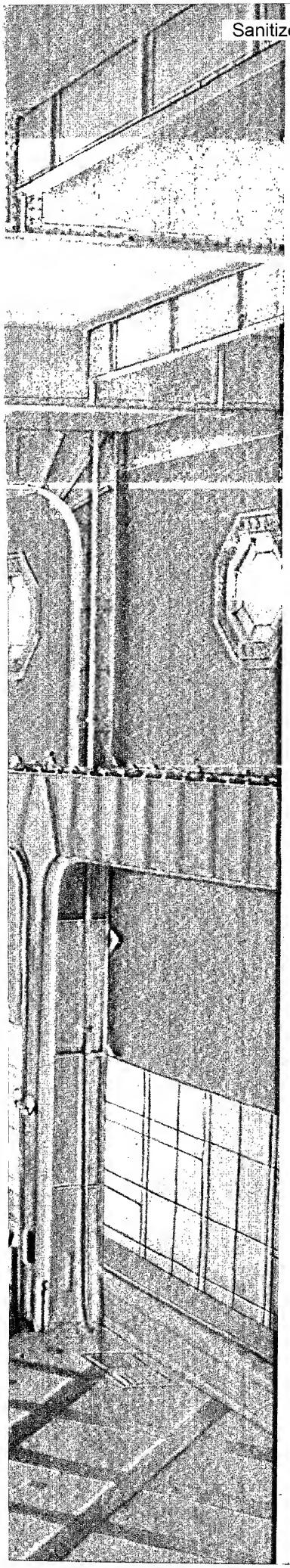


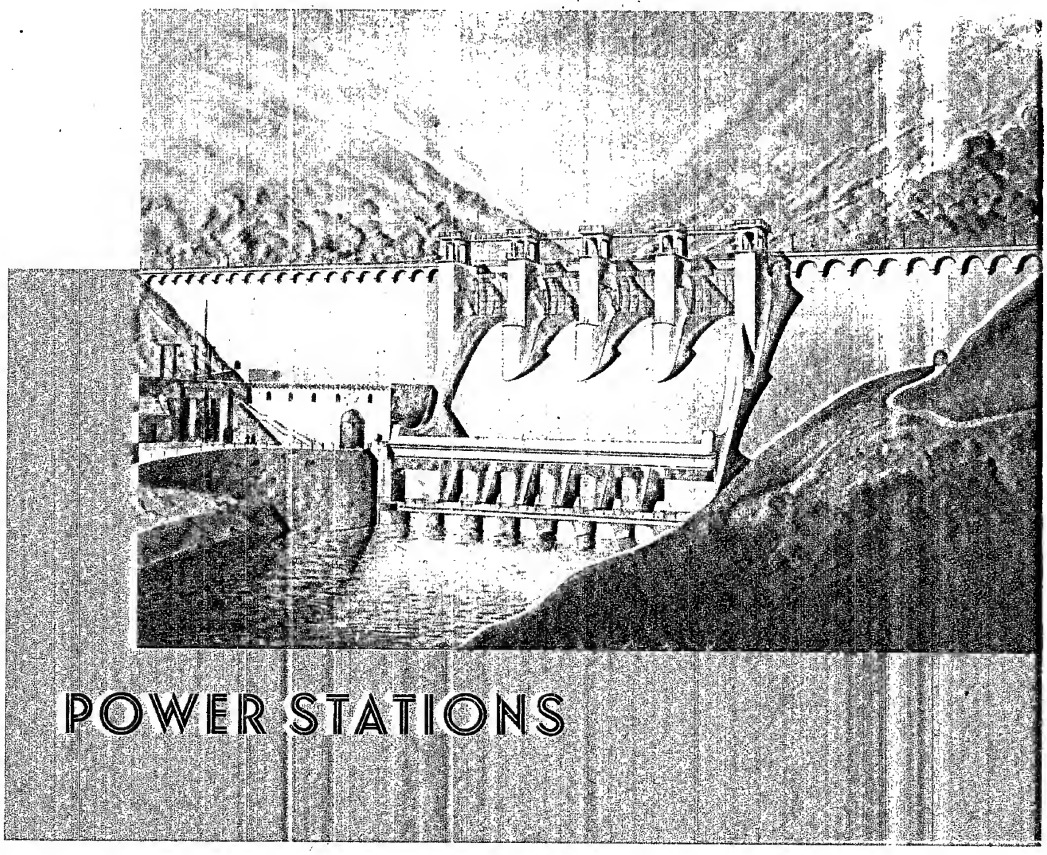




In collaboration with the Soviet Union, India constructs a large steel plant at Bhilai.
Photo: Blast-furnace







POWER STATIONS

Power engineering is the basis for developing the economy and culture of a country.

Output of electric power is steadily increasing in the Soviet Union. In 1952, the Soviet Union produced 117 000 million kW-hr of electricity, in 1955 – 170 000 million kW-hr, in 1957 – 210 000 million kW-hr. By 1960, output of electric power will reach 320 000 million kW-hr.

The Soviet Union has started the construction of giant hydropower developments on the Volga, the Angara and the Yenisei. The construction of a cascade of seven hydropower stations with an aggregate capacity of over 7 million kW, is nearing completion on the Volga waterway alone.

In the eastern regions construction has been started on the Bratsk Hydropower Station on the Angara and on the Krasnoyarsk Hydropower Station on the Yenisei. Each of these stations will have a capacity of 3.2 million kW.

The atomic power stations being built under the Sixth Five-Year Plan are to have a total capacity of 2 to 2.5 million kW.

The Soviet power network is being extended not only by increasing output capacities, but also by qualitative changes involving the installation of modern equipment.

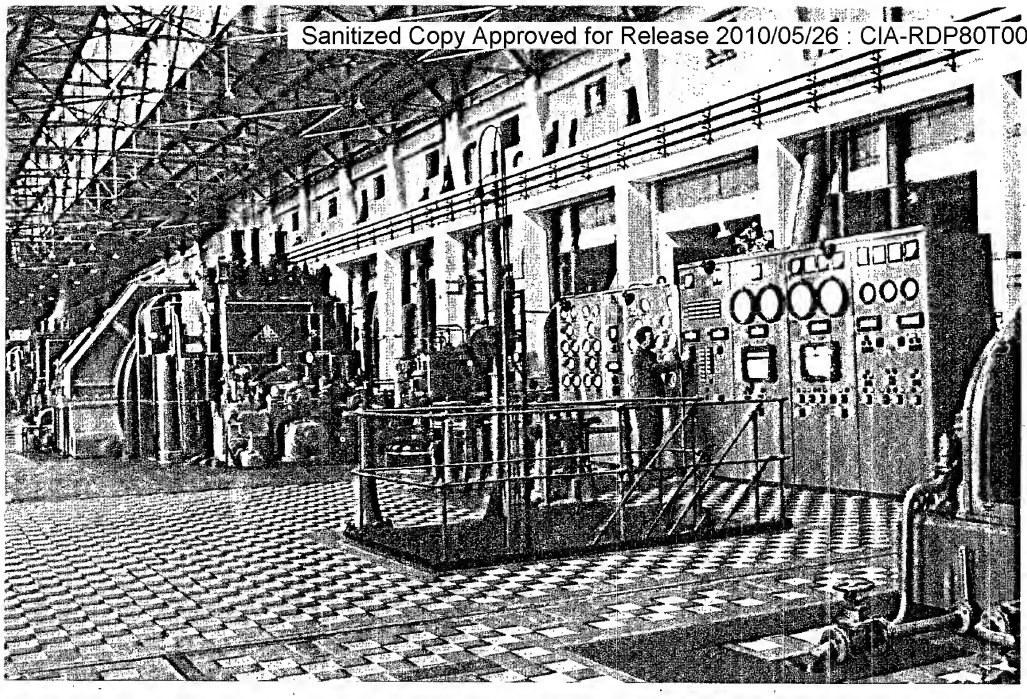
New, efficient thermal power stations are being constructed and equipped with the latest equipment including high-pressure boilers and turbines.

The technical progress in power engineering and machine-building and the experience gained in building power stations in the U.S.S.R. provide a basis for implementing obligations to provide technical assistance in the construction of power stations abroad.

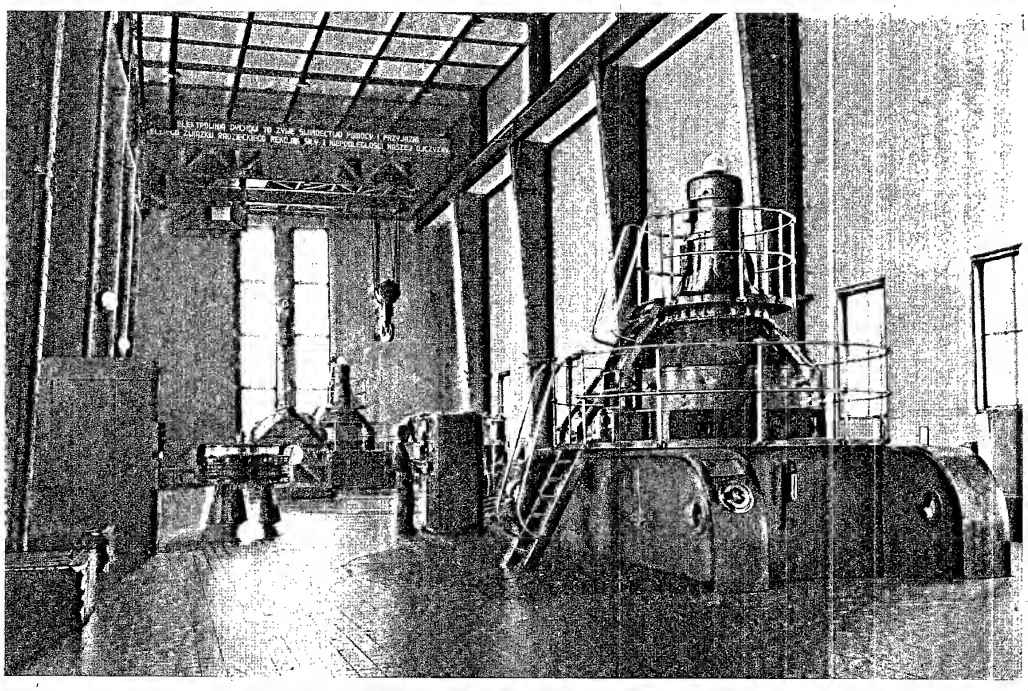
As many as 78 power stations have been built or are being constructed with Soviet assistance in the Chinese People's Republic, the Korean People's Democratic Republic, the Democratic Republic of Viet-Nam, Albania, Bulgaria, Poland, Rumania, and other countries.

Soviet organizations are experienced in constructing power stations that operate on low grade coal. Such power stations are successfully operating in Bulgaria, for example.

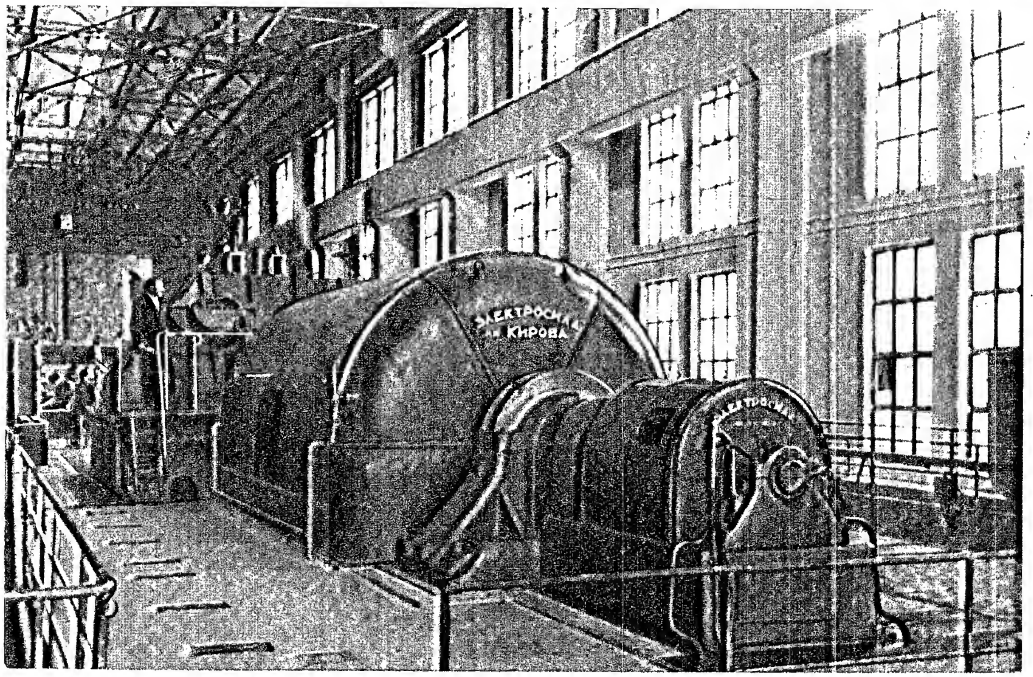
The Soviet Union accepts orders for desingning and construction work and for deliveries of full sets of equipment for river, dam, derivation, and other types of hydropower stations.



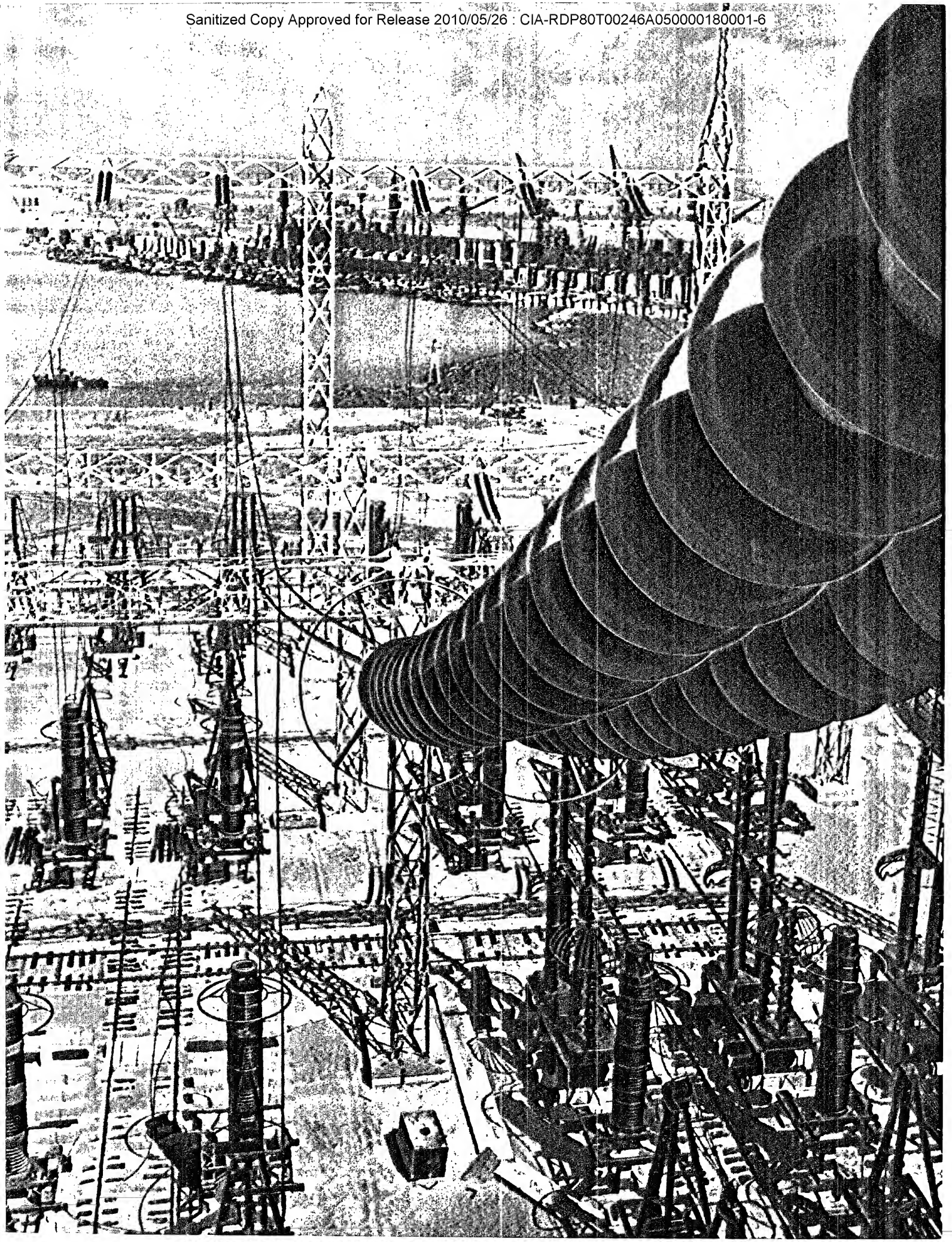
Combined electric power and heat generating station "Jawozno-II", Poland, 300 thousand kW (machine room)

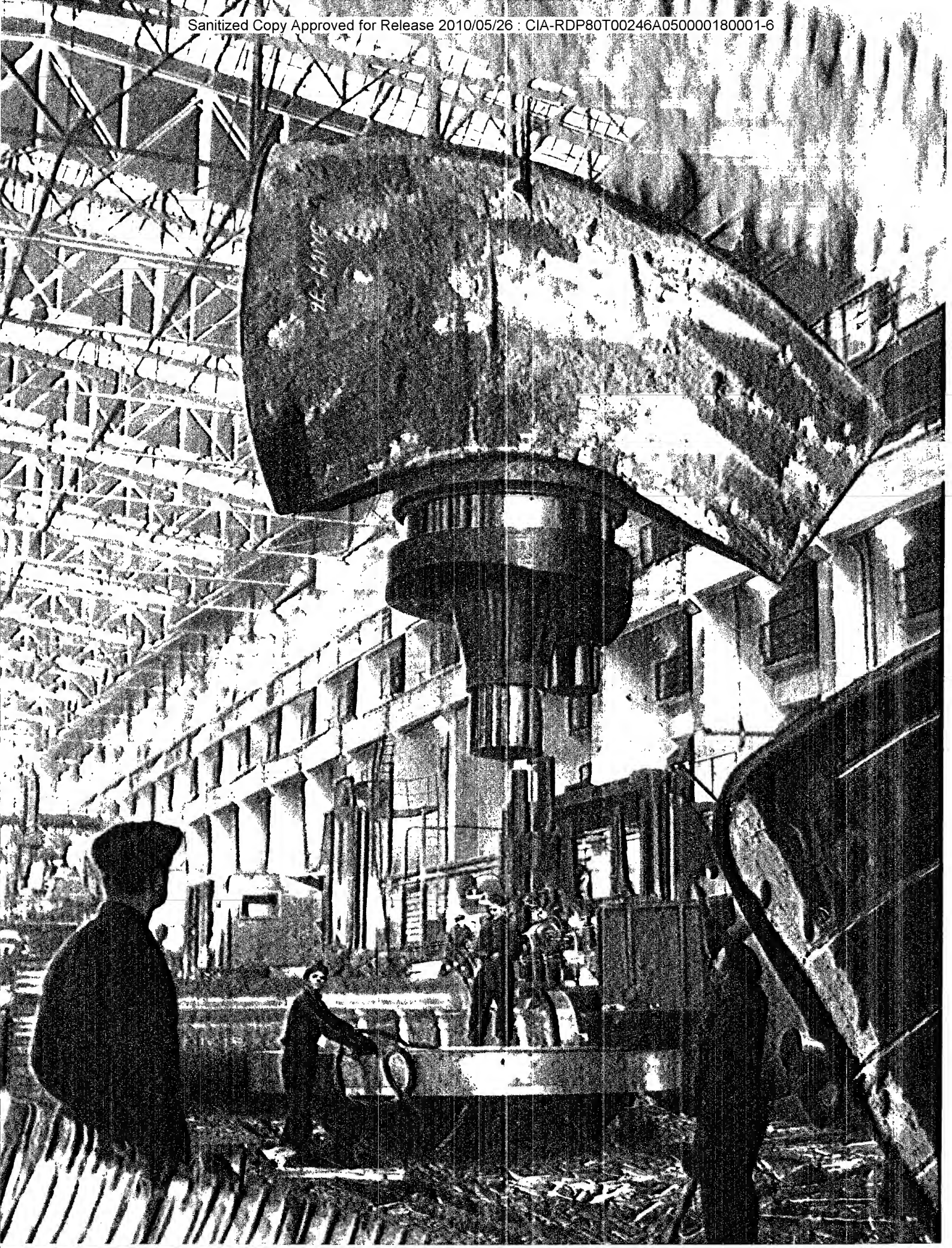


Hydroelectric power station "Dyhov", Poland, 70 thousand H.P. (machine room)

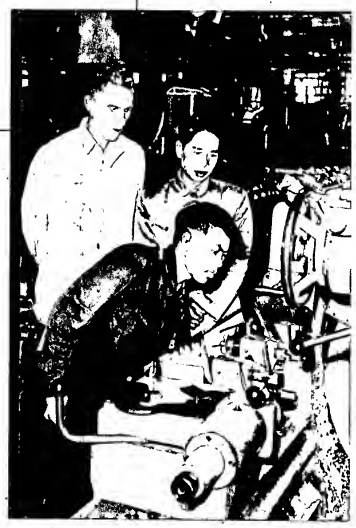


One of the turbogenerator sets, 50 thousand kW, at the combined electric power and heat generating station, Petroshan, Rumania





MACHINE-BUILDING



Soviet specialists gladly share their experience with countries abroad. This photo shows Chinese workers during their industrial practice

The Soviet machine-building industry produces all sarts of machines, mechanisms, machine-tools, instruments and apparatuses. Every year, the Saviet Unian produces 700–900 types and kinds af machines, including giant turbageneratars and high-precision machine-taols, the latest faundry equipment and automatic devices, pawerful building machinery, and high-precision instruments, electranic computers and atamic reactars.

On the basis of the high technical level of production achieved by Soviet machine-builders, "Technaexpart" co-operates with the Chinese People's Republic, Poland, Rumania, Bulgaria, India and other countries in the canstructian of machine-building plants, and amang them, plants producing steam turbines, bailers, piping and pipe fittings, passenger cars and larries, agricultural machinery, tractors, machine-taols, tools, ball bearings and so forth – altagether 135 works.

China and Poland did not have an automobile industry and relied an imparts ta caver their needs.

Today, through Soviet assistance, the Chinese People's Republic has built its first lorry plant, the Tse-fan works, which puts aut 30 000 vehicles annually.

Poland has a Saviet-designed and equipped passenger car warks in Warsaw and a larry works in Lyublin with an annual autput capacity af 25 000 vehicles each.

In Rumania there is a Soviet-designed plant equipped with the latest Saviet machinery. Its annual autput capacity is one million different kinds of bearings; provision has been made to increase autput up to 3 million bearings.

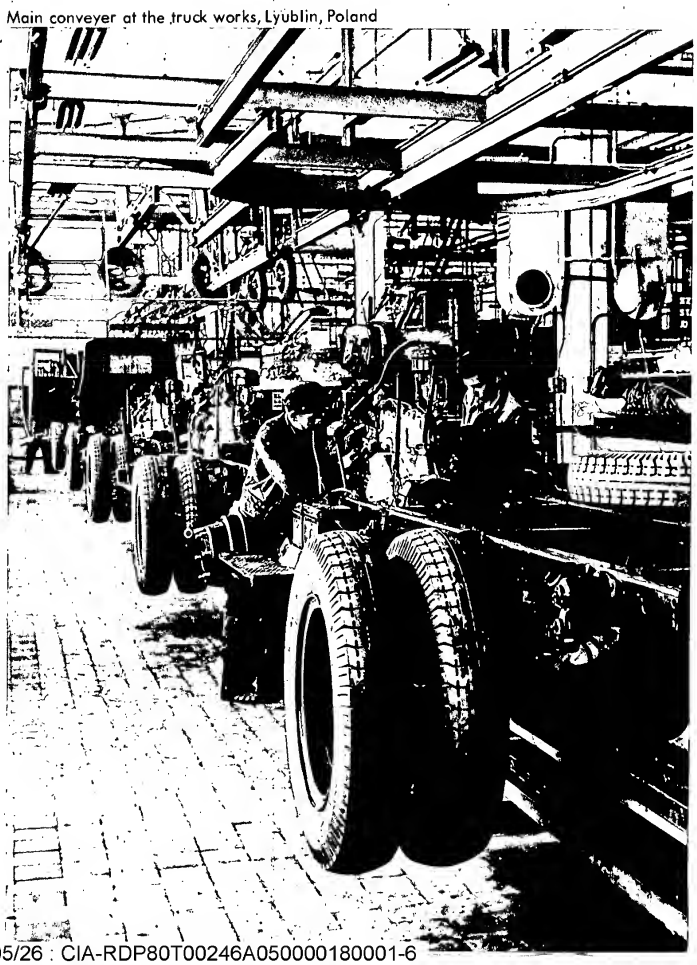
Bulgaria has received technical assisance in the construction af automobile repair works in Sofia and Plovdiv. These warks are successfully coping with repair requirements and are contributing ta the normal exploitation af Bulgaria's transpart facilities.

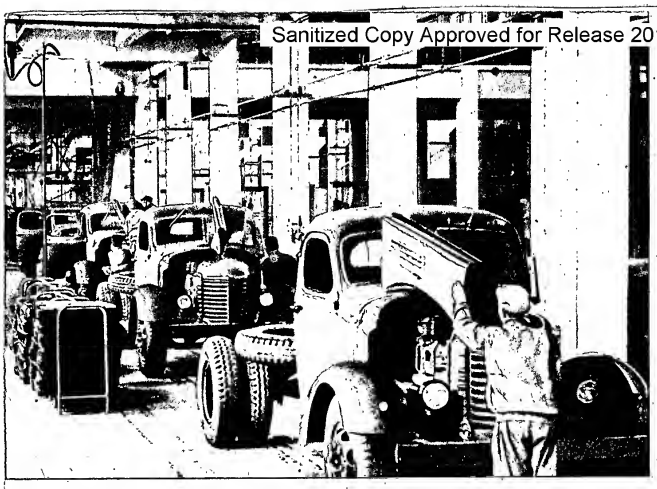
Under contract with an Indian company a file works with an annual output of 360 000 files has been designed and equipped with high-productive Soviet-made machine-tools.

The leading officials af the campany are very much satisfied with the quality af the praducts and ta their arder Saviet specialists have increased the plant's output capacity. "Technaexport" has concluded a contract with the same company to design and deliver equipment far a secand similar plant in India.

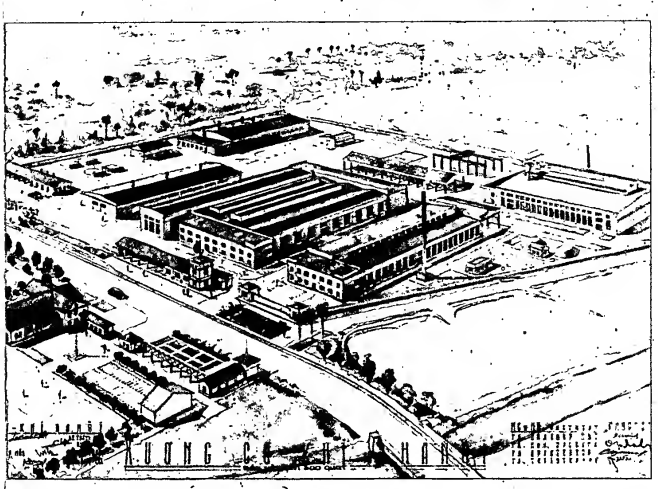
By cantract, "Technoexpart" builds nat only large, but also small industrial enterprises in fareign cauntries. Far instance, a machine plant producing up ta 3 000 machines annually has been built in Hanai, the Demacratic Republic af Viet-Nam.

Main conveyer at the truck works, Lyublin, Poland

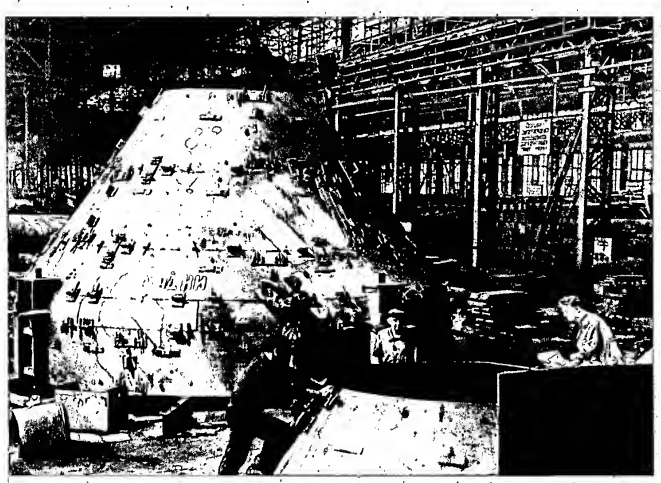




Assembly department at the Tse-fan truck works, Chauchung, China



Engineering works, Hanoy, Democratic Republic of Viet-Nam. Production capacity — up to 3 thousand products per annum



These metal structures have been manufactured by the Dnieperpetrovsk Works and supplied for the filters of the blast-furnace at the Bhilai steel plant, India

Through "Technoexport", the U.S.S.R. delivers complete sets of equipment and fulfils orders for research, prospecting, designing and other jobs connected with the construction of enterprises of many other industries.

In a short article such as this, it is impossible to give even a brief description of all the types of factories and plants that are being built abroad with Soviet assistance. We can only say that hundreds of industrial enterprises are being built with Soviet assistance in such branches as electronic and radio engineering, communications, building materials and wood-working, light, food, chemical and pharmaceutical industries, cinema apparatus industry, etc.

The activities of "Technoexport" are not limited to technical co-operation with foreign states in the construction of industrial enterprises such as those mentioned above, but include overall assistance in establishing engineering structures.

Thus, with the help of Soviet experts, a large bridge has been built across the Danube to link Rumania with Bulgaria, and another large bridge has been built across the Yangtze River in China.

To fulfil the orders placed with "Technoexport", the services of research and designing institutes are enlisted and in case of need of – the corresponding institutes of the U.S.S.R. Academy of Sciences and the Republican Academies of Sciences.

All projects are examined by commissions of experts, which procedure ensures the solution of technical problems that arise when a project is in the designing stage.

The equipment for the enterprises constructed abroad with the aid of the Soviet Union is manufactured at large, first-class plants such as the Urals Heavy Machine-Building Plant which produces presses, rolling, forge and other equipment; the Electrosila Electric Machine-Building Plant of Leningrad, which produces powerful turbogenerators and hydrogenerators; the Urals Hydraulic Machines Plant, which produces powerful, high-productive pumps for chemical and other enterprises; the Krasny Kotelshchik Works of Taganrog, which puts out powerful boiler units for large thermal power stations; the Kolomna and Novo-Kramatorsk Heavy Machine-Tool–Building plants, which produce heavy machine-tools for

ТЕХНОЭКСПОРТ

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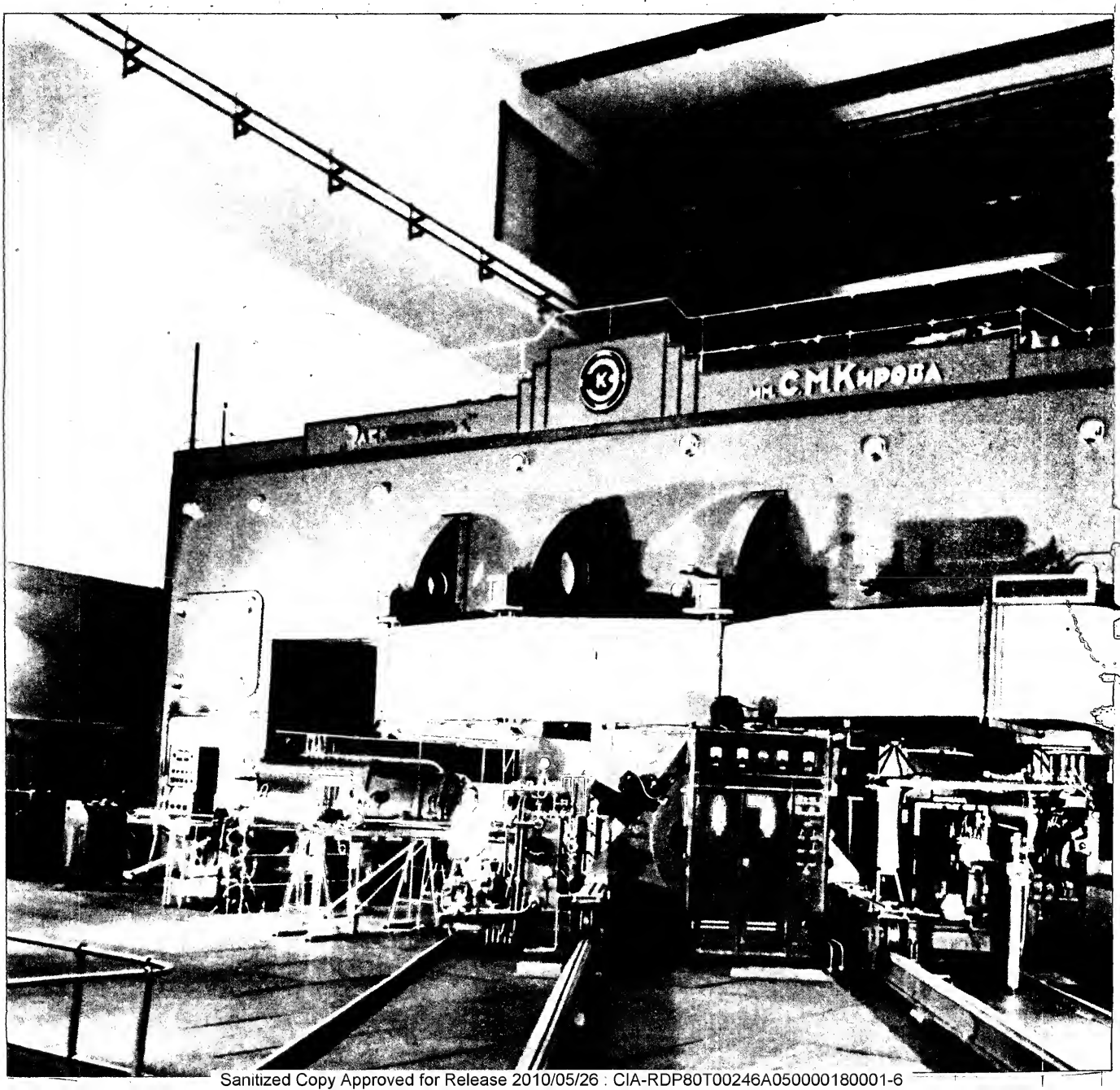
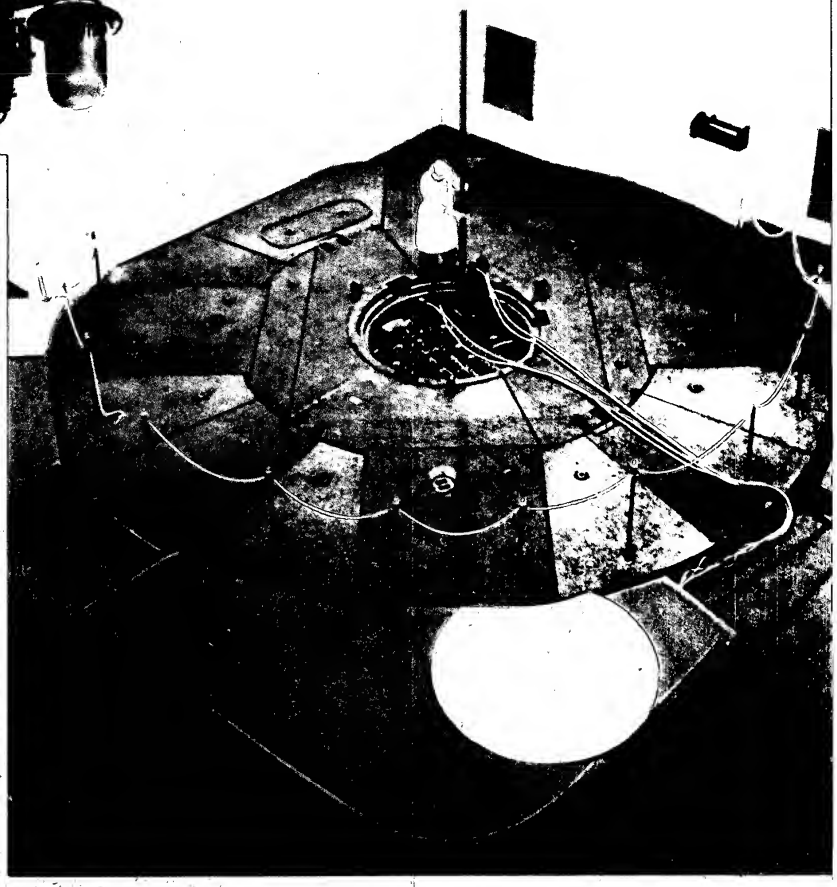
For detailed information, please apply to V/O "Technoexport", Moscow, G-200

At the United Institute of Nuclear Research. Synchrocyclotron installation to accelerate charged particles to velocities approaching the velocity of light. The maximum proton energy, obtained on this accelerator, is 680,000,000 electron-volts

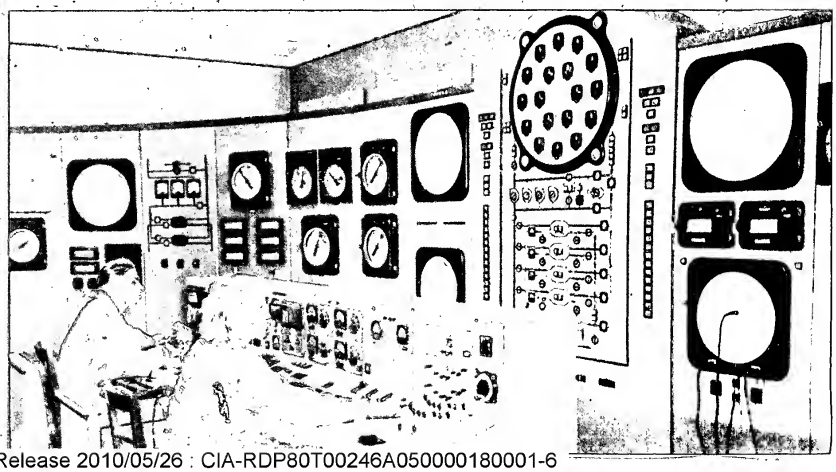


Green lamp is ON. This indicates that the reactor is damped, radioactive radiation is absent and work in the vicinity of the reactor is allowed



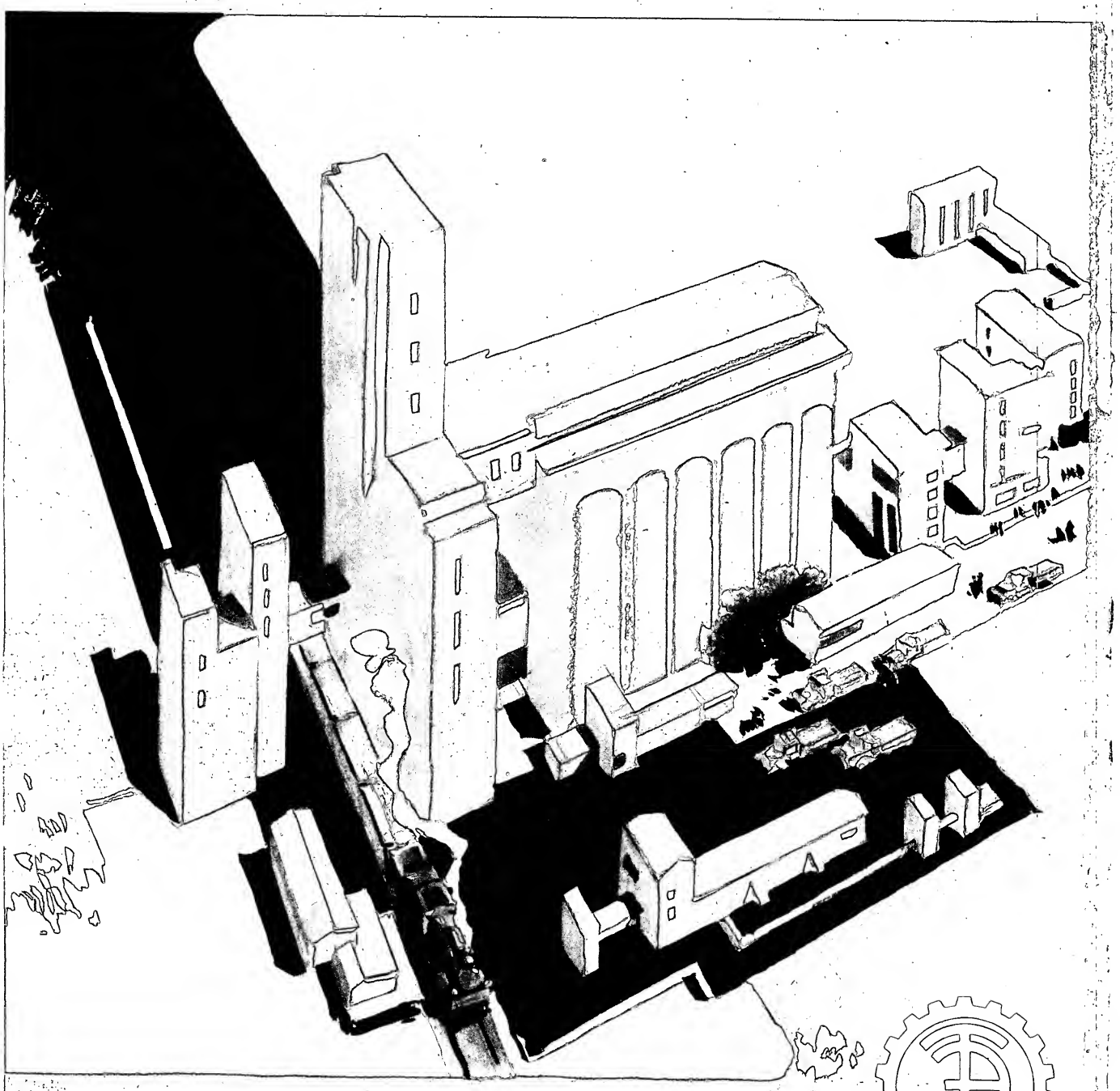
At the atomic electric power station of the U.S.S.R. Academy of Sciences. Heat for the production of steam and electric power is obtained in the reactor, where a controlled chain reaction takes place to split uranium and free the intranuclear energy. The photo shows the charging into the reactor of one of the channels containing uranium

Central desk controlling the reactor and the heat power section of the atomic electric power station



ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ

ТЕХНОЭКСПОРТ



No country can afford to be without such plants as grain elevators, flour mills, mechanical bakeries, meat production combines and various other enterprises of the food industry

With the aid of our specialists, you will ensure speedy construction of profitable high production enterprises

Please address your enquiries to V/O "Technoexport", Moscow, G-200

various purposes; Ukrainian plants which produce equipment for chemical factories; the Moscow Transformer Plant, which produces high-voltage power transformers, and many others.

Under contract with foreign Clients, "Technoexport" renders technical assistance in the installation of equipment delivered from the U.S.S.R., in putting into operation Soviet-designed enterprises, in adjusting assembled equipment, in organizing production, and also in training personnel for these enterprises.

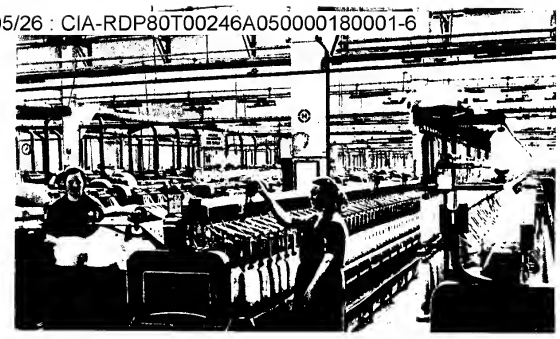
If the necessity arises, "Technoexport" gives technical assistance in organizing the construction of Soviet-designed enterprises that are being built abroad and also supervises the building of these enterprises.

All enterprises constructed abroad with Soviet aid by contract with "Technoexport" are successfully operating and not only reach their rated output, but, as a rule, exceed it.

As practice at the operating enterprises has shown, the foreign specialists and technicians trained in the U.S.S.R. are successfully handling the new machinery supplied by the U.S.S.R.

In giving technical assistance for establishing national, independent industries in foreign countries, Soviet organizations are not worried that in so doing they may be creating competitors for themselves.

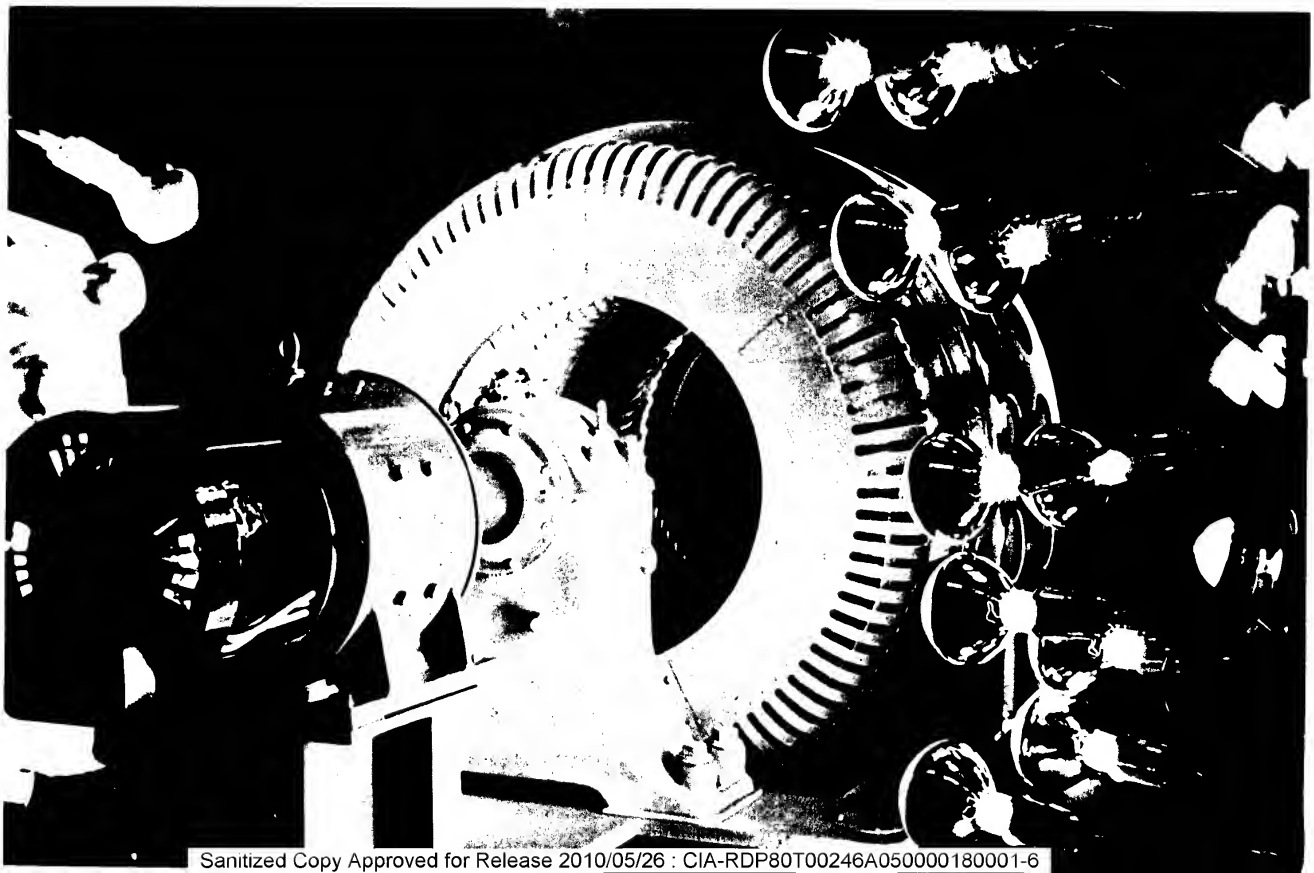
Soviet foreign trade orgonizations have never regarded a country

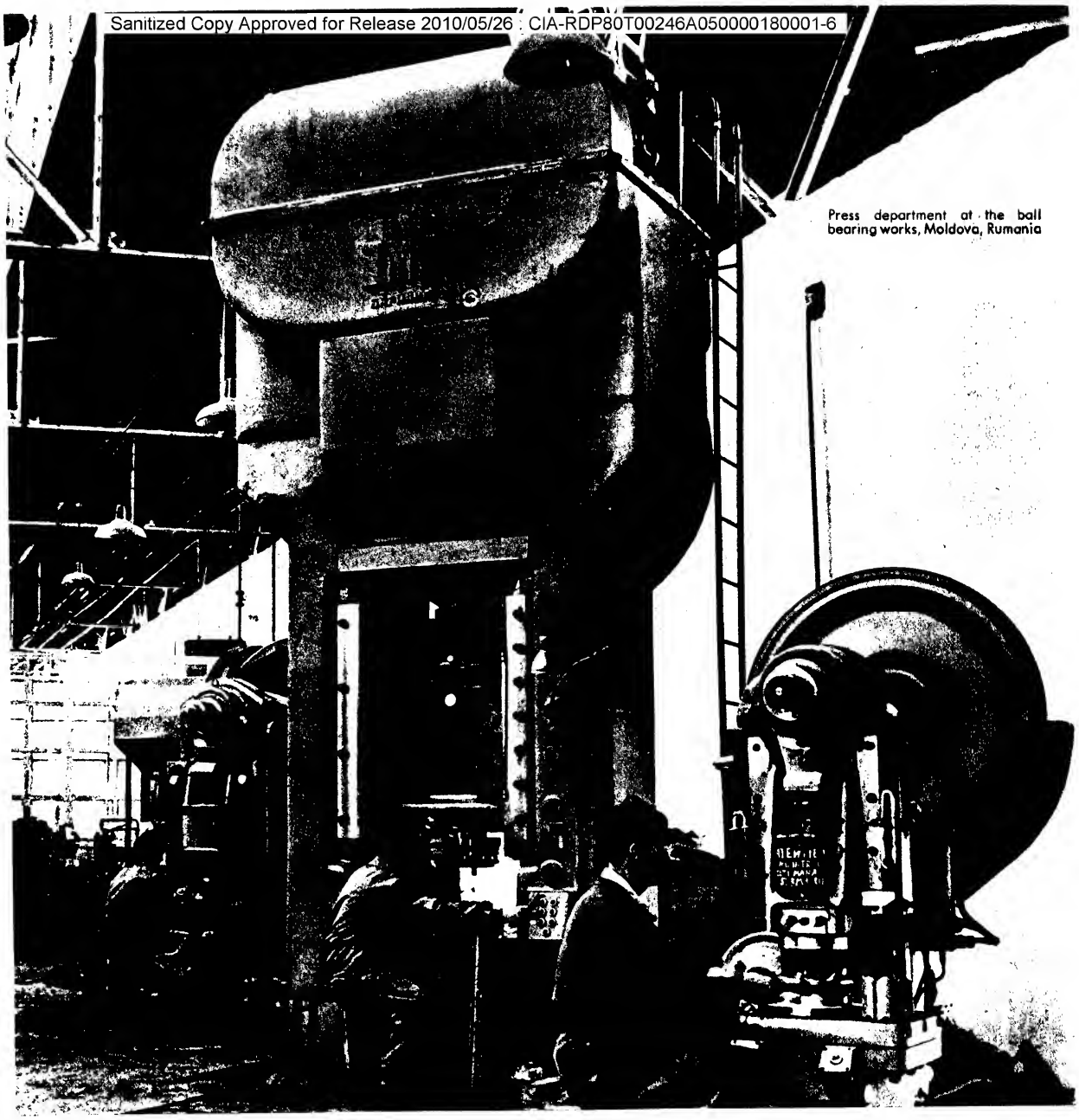


Spinning mill for 50 thousand spindles, Petrakow, Poland

Spinning compartment for 20 thousand spindles at the textile combine, Tirana, Albania

Soviet machine equipment for use under special climatic conditions is made of corrosion-resistant metals and special alloys; the insulating materials excel particularly in durability. This synchronous motor is intended for use in the Bhilai Foundry, India. The machine is dried up by infra-red rays before it is sent abroad to the purchaser.





Press department at the ball bearing works, Moldova, Rumania

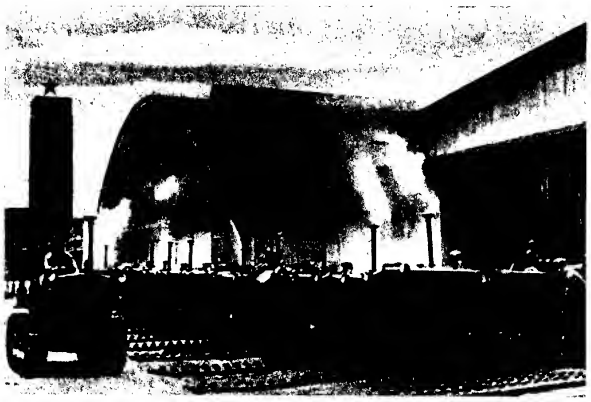
as a market for their goods. They are interested in establishing economic relations with foreign countries on a basis of mutual benefit and respect for the national sovereignty of both highly-developed and economically underdeveloped countries, big and small.

In the past six years alone, the number of foreign orders received by "Technoexport" has increased more than three times.

Because of the large number of orders placed with "Technoexport" and with a view to expedite their fulfilment, "Technoexport" has, beginning from June 1, 1957, passed its obligations for technical assistance in the construction of enterprises in a number of countries to "Tyazhpromexport", "Prommashexport" and "Technopromexport", which will carry on their activities in close contact with foreign Clients as successfully as has been the case before.

"Technoexport" will continue to concentrate mainly on technical co-operation and the construction of complete enterprises in economically underdeveloped countries.

File works, constructed in India, manufacture high quality products.

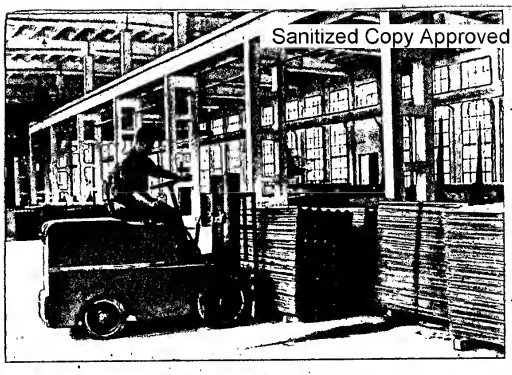


Tractor works, Rumania

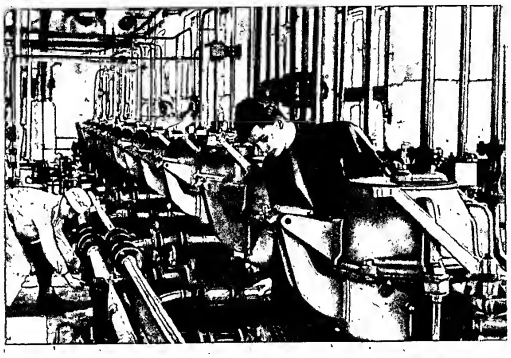
Photo below shows one of the buildings of this works

Automobile repair works, Bulgaria

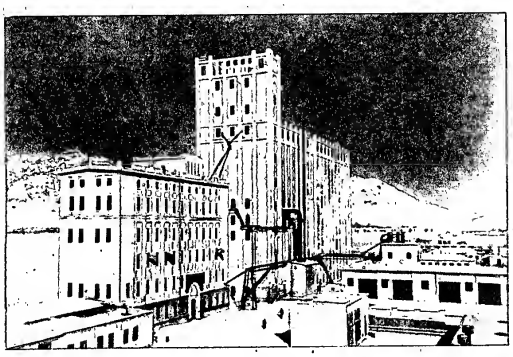
The photo is a general view of the mechanical bakery combine the construction of which was completed in Kabul December 1957. It consists of a 20 thousand ton capacity grain elevator, a flour mill for 60 tons of flour per 24 hours, and a mechanical bakery for 50 tons of bread products per 24 hours. The mechonical bakery combine was constructed on credit given by the Soviet Union to Afghanistan and with technical aid by Soviet specialists



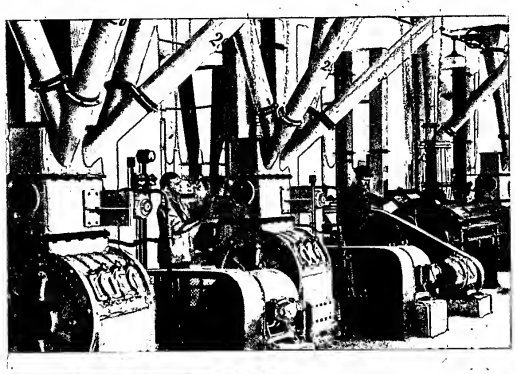
Works for the production of asbestos cement plotes and pipes in Rumania, capacity 21 thousand tons of plates and 11 thousond tons of pipes per onnum



Antibiotics works, Yassy, Rumania. Photo shows department for the extraction of penicilline

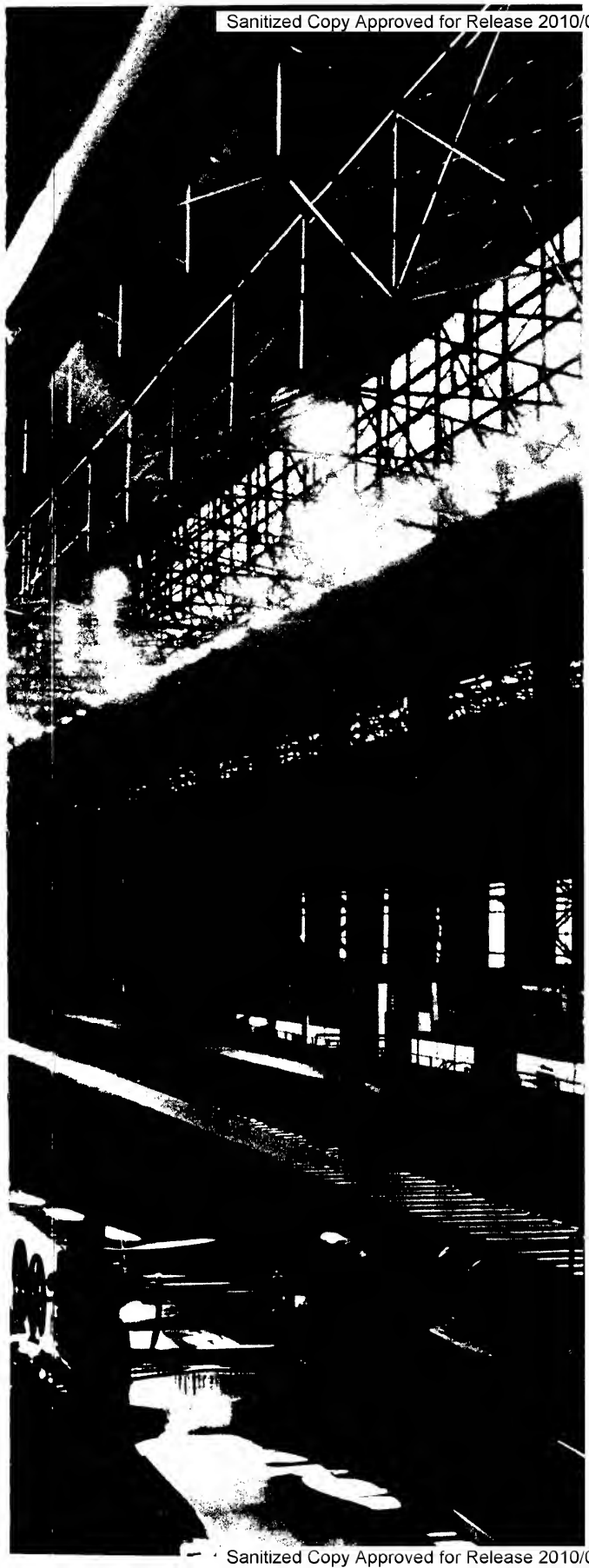


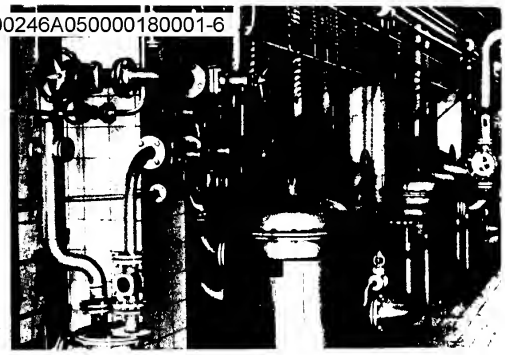
Catton combine, Kabul, Afghanistan



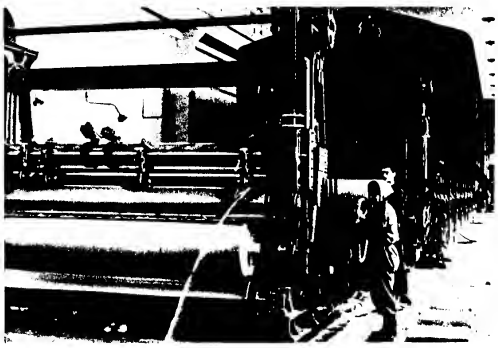
Combination forage works in Bulgaria, production 50 tons per shift

Electrical porcelain works in Bulgaria, production — 2 thousand tons per annum. Photo: Tunnel furnaces

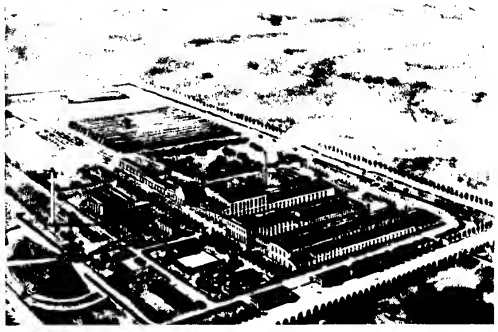




Penicilline works in Czechoslovokia, production — 4 thousond milliords of internotional units per onnum

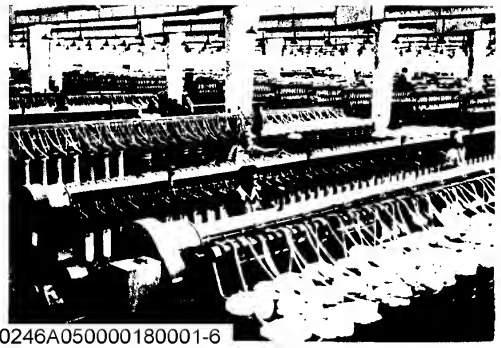


Sulphote-cellulose works in Bulgorio, production — 12 thousond tons of sulphote-cellulose per onnum, with 4 thousond kW electricol power stotion, plont for the production of kroft-sulphote paper using 12 thousond tons of cellulose per onnum, also shop for the production of poper bags using 6 thousond tons of paper per onnum. Photo: One of the works departments

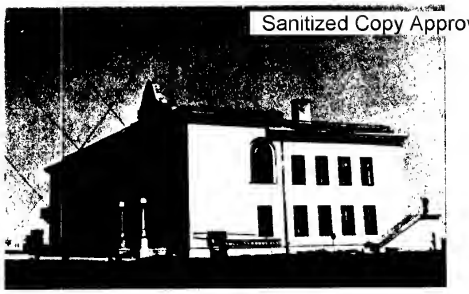


Cellulose-poper combine, Tsyamusy, China. General view of the combine

Cotton-cleoning plont, Fieri, Albonio, production — 7.5 thousond tons of cotton per onnum. Photo: Press department



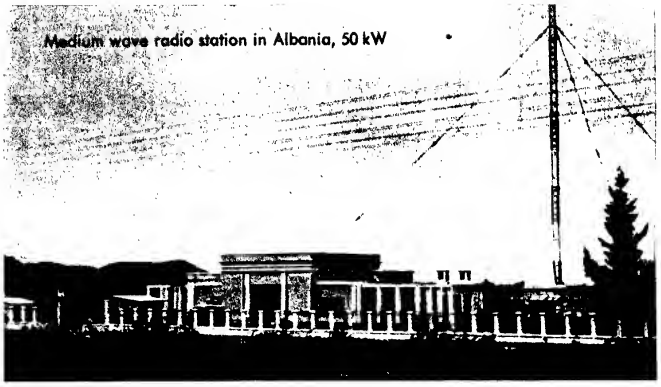
Textile mill, Petroshon, Rumonio

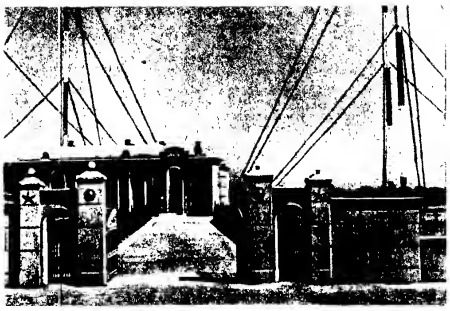


Rodio broadcosting stotion in Polond, 300 kW

Radio center, 300 kW, in China. Control switchboard

Film studio in Albanio for the production of sound topical films, news-reels, documentary films



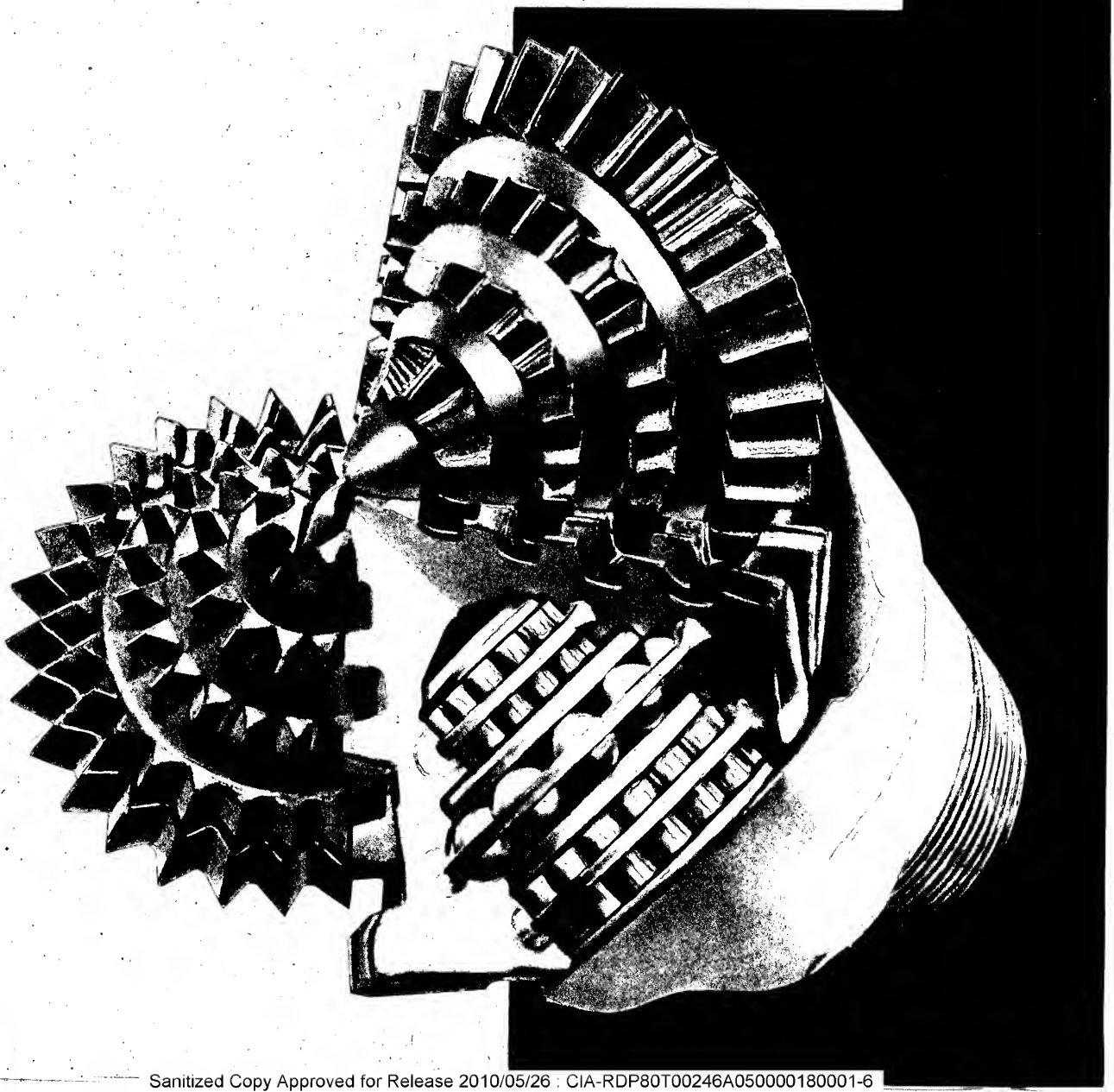


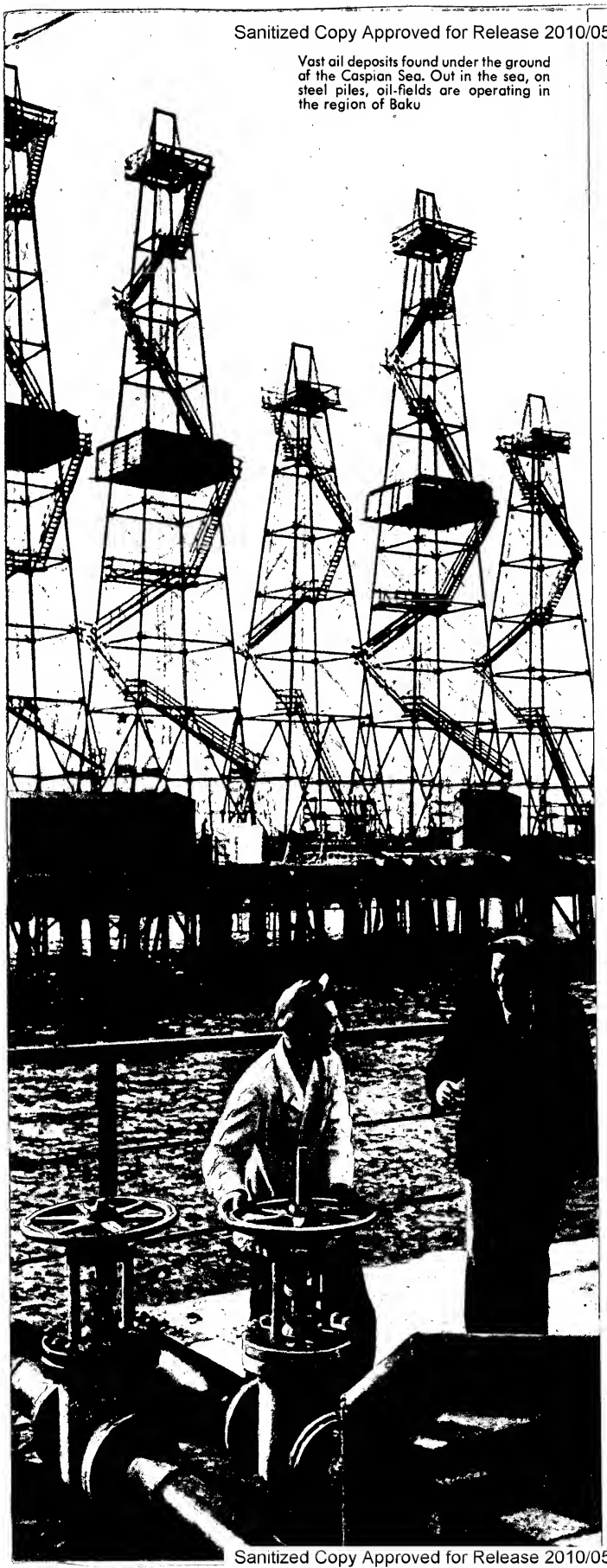
Radio stotion in China

New bridge joining the Rumanion and Bulgorian banks of the Danube

МАШИНОЭКСПОРТ

OIL-WELL DRILLING AND PRODUCTION EQUIPMENT





Vast oil deposits found under the ground of the Caspian Sea. Out in the sea, on steel piles, oil-fields are operating in the region of Baku

The considerable increase in the production of petroleum and gas in the U.S.S.R. was possible due to the progress in the Soviet oil-well equipment industry. At the present time all types of equipment required for drilling prospecting and production wells as well as equipment for production of oil and gas are being manufactured in the Soviet Union.

Soviet heavy machinery works turn out two types of high-performance well drilling units designed for rotary-and turbine-drilling of deep oil and gas wells, namely the "Uralmash-5Д" and the "Uralmash-3Д".

The "Uralmash-5Д" drilling unit is roted for drilling wells up to 3 000 m deep. It is driven by a set of five type B2-300 Diesel engines, hoving an output of 300 H.P. each. The outfit con be expediently used for both rotary-or turbine-drilling methods, at high drilling speeds. So, for instance: in the Bashkirian oil-fields, oil wells are being drilled by "Uralmash-5Д" drilling units equipped with a turbo-drill at monthly performance rates exceeding 3 000 m per rig.

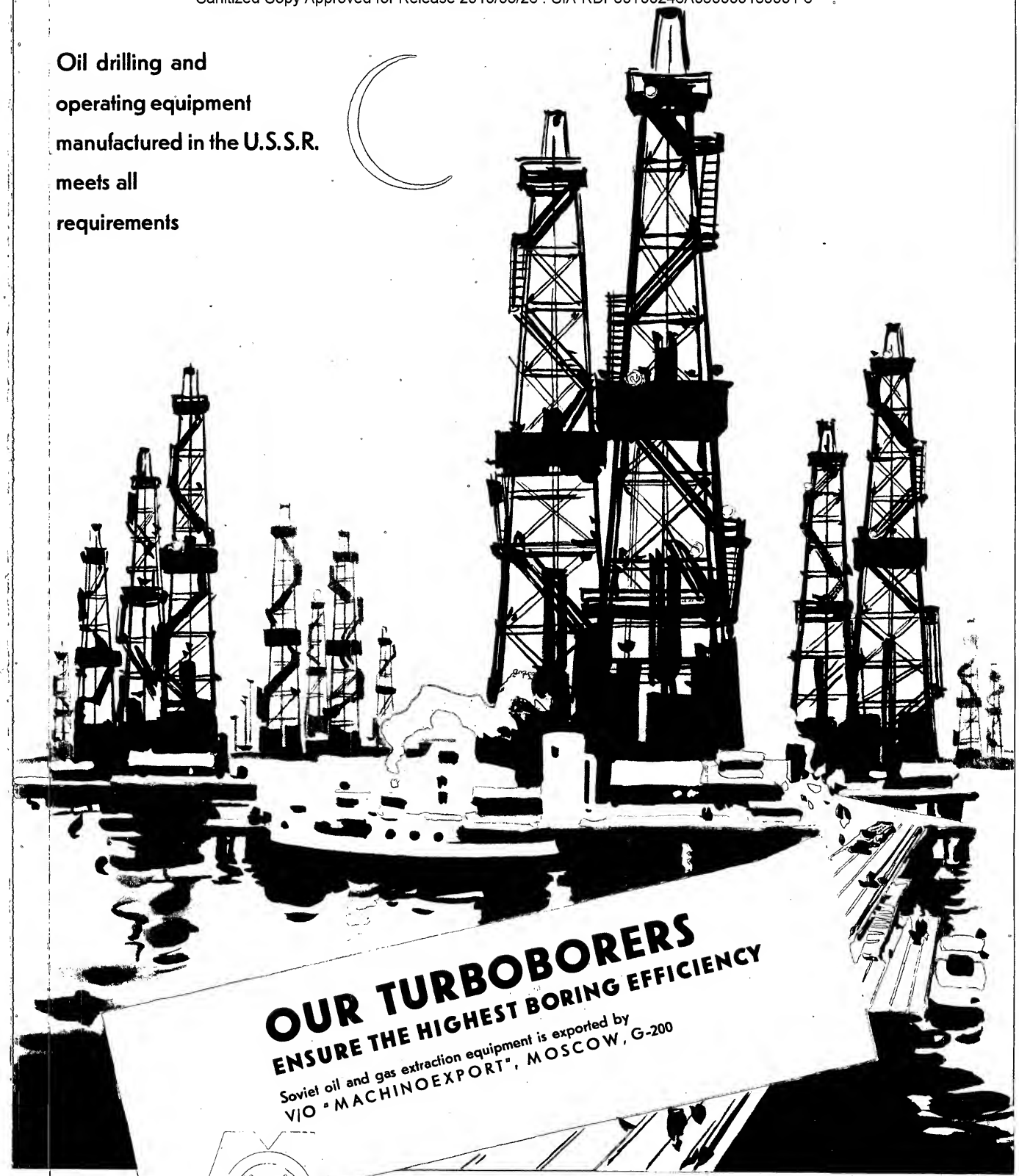
The "Uralmash-5Д" drilling unit has centralized pneumatic and mechanical controls. Rotating parts of the mechanisms are engaged and disengaged during drilling by means of air-tube clutches operated from a central control panel. The drilling equipment includes a model У2-4-5 draw works providing four hoisting speeds and three rotary toble speeds. The drow works is equipped with a hydraulic brake which automatically limits the lowering speed when bringing the drill or casing pipe string into the well.

The power distribution problem hos been solved porticulory successfully. Three Diesel engines alternately drive a slush pump and the draw works (one engine is a stand-by) while two Diesel engines drive the other pump. The latter may be located at some distance from the well centre, to suit the requirements of the drilling process.

The power plant, draw works, rotary, and slush pumps are mounted on skids to facilitate moving the output quickly from one drilling site to another with the help of tractors. For locotions where electrical power is ovoiloble, the outfit moy be furnished with electric motors. This alternote design is known os "Uralmash-6Э". The "Uralmash-6Э" drilling unit is equipped with an electricol drive group comprising a power unit driving the draw works and rotary table and a second power unit driving the two slush pumps. Besides this an emergency driver, consisting of an internal combustion engine, is mounted on the frame of the power unit driving the draw works ond rotary. In case of electrical power failure, the emergency driver can be used to lift the tool string in the well, up to 130 t in weight, in order to prevent seizure.

The "Uralmash-3Д" drilling unit, designed for drilling wells up to 5 000 m in depth, is distinguished for its simplicity in operation and high drilling performance. The copocity of its hoisting system is 200 t. The unit is equipped with a mighty 2 000 H.P. Diesel power plant. To sove time in lowering and raising operotions, the fifth hoisting speed has been provided in the design of the У2-5-4 draw works.

Oil drilling and operating equipment manufactured in the U.S.S.R. meets all requirements



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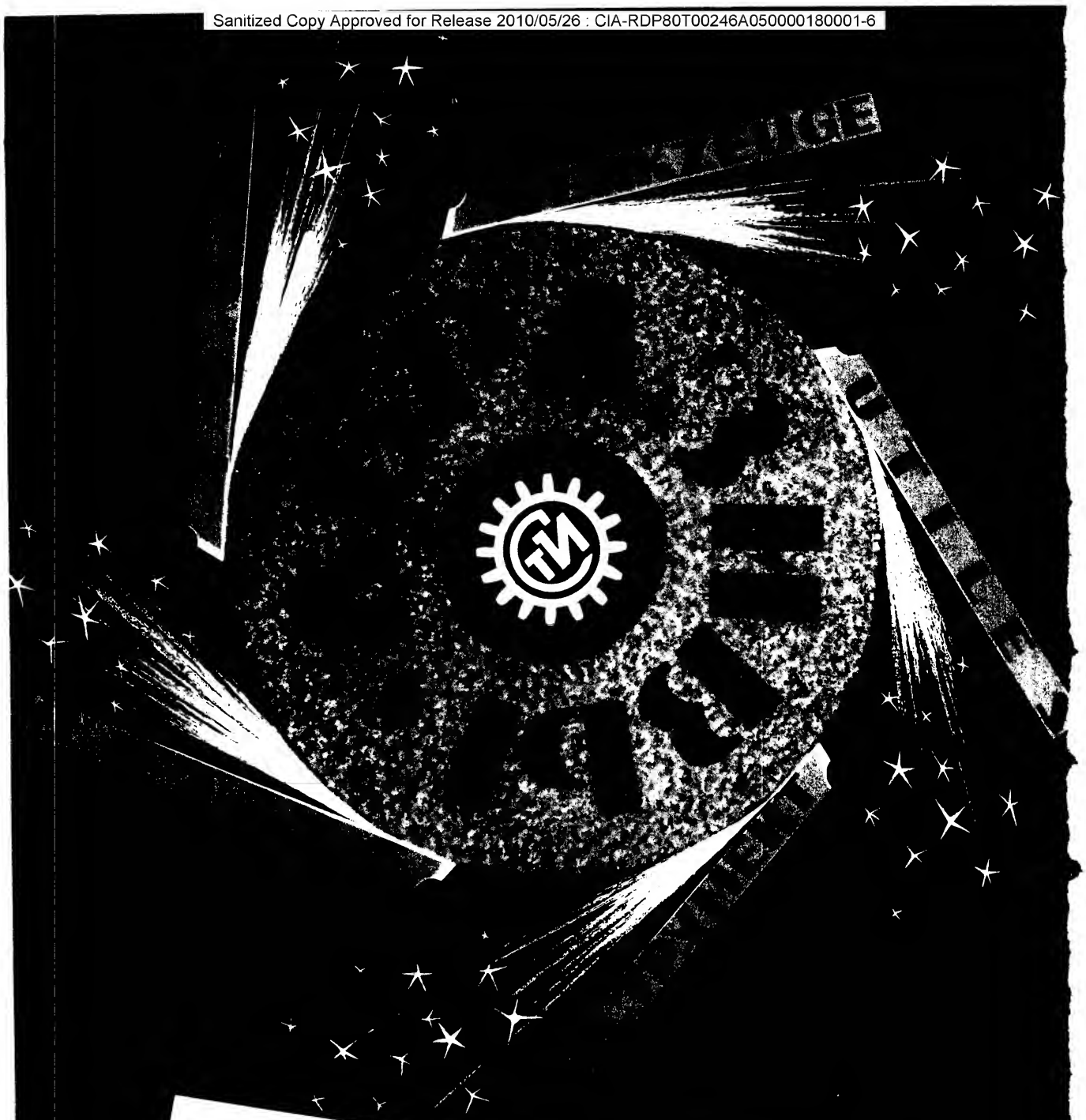
ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ
МАШИНОЭКСПОРТ



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The relioble operotion of this outfit is ensured by the use of a chainless drive. Power is transmitted from the power plont to the draw works through universol joints.

Type B2-400 Diesel engines of 400 H.P. each, are used in the power plont of the drilling unit. The generol arrongement of the power plant is practically the same as in the "Uralmosh-5Д".

The "Uralmosh-5Д" ond "Uralmash-3Д" drilling units ore furnished complete with derrick, steel substructure, shelters, working and emergency toals outfits, drill and casing pipe supplies, mud-mixers, ond piping for the slush pumps.

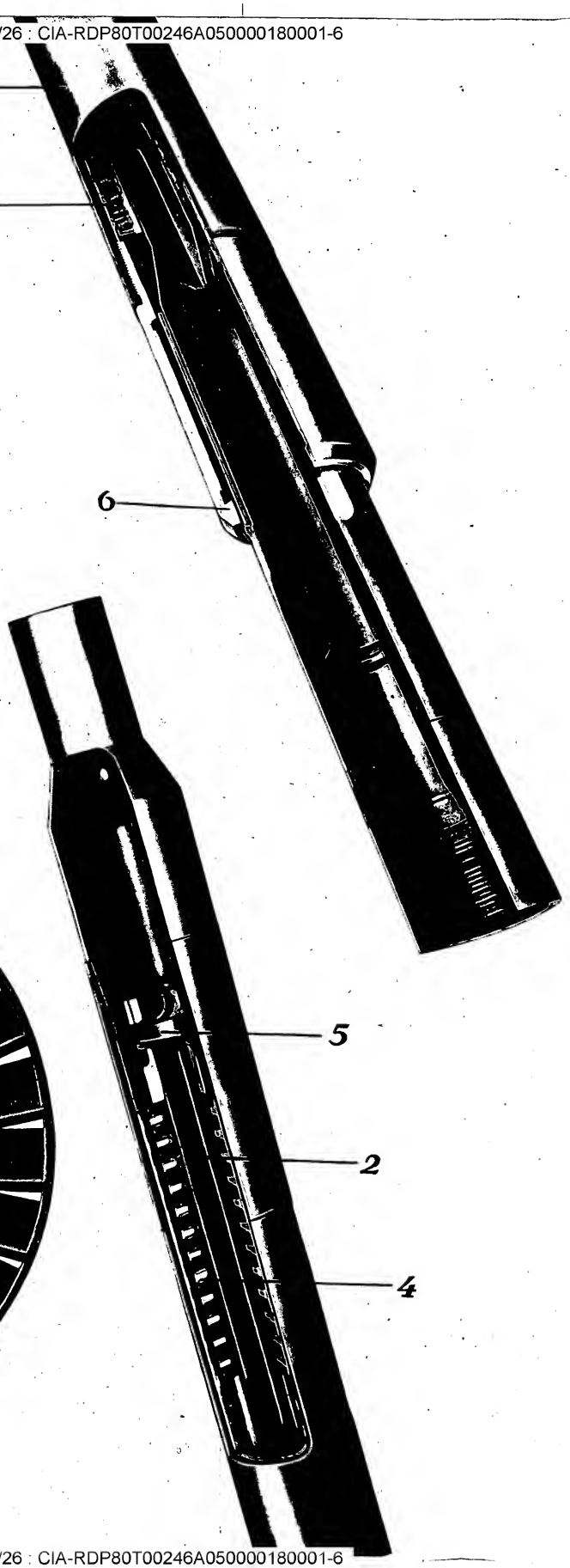
The "Uralmosh-3Д" drilling unit is provided with a handpawer jib crone, with o hoisting capocity of 3 t, for auxiliary operations. For locations where electrical power is available, the above unit can be furnished with electricol drive. This alternote design is called the "Uralmash-4Э". The latter alsa includes an emergency engine drive.

The "Uralmosh-5Д" ond "Uralmash-6Э" drilling units ore furnished with type BM-41 41 m derrick, while the "Uralmash-3Д" and Uralmash-4Э" have a 53 m derrick, type B1-53-300.

The turbine-drilling method, first developed by Soviet engineers, is widely used in the U.S.S.R.

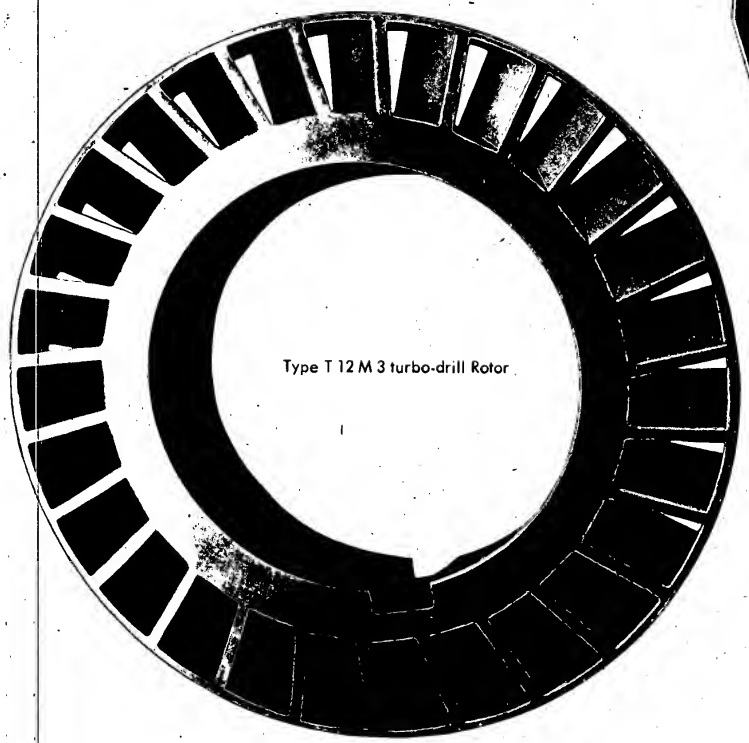
The most important advantages of the turbine-drilling method, in camparison with ratary drilling, include the following:

1. Higher efficiency of power transmission from the power plant to the bit and a considerable decrease in the number of drill pipe failures due to the fact that the string of drill pipes does not ratate during drilling.



Sectional View of the T 12 M 3 Turbo-drill

1 – turbo-drill housing; 2 – turbo-drill shoft; 3 – sectionol view of turbo-drill stotors ond rotors; 4 – turbo-drill shoft beoring parts; 5 – rotor nut; 6 – turbo-drill nipple



Type T 12 M 3 turbo-drill Rotor

2. Higher speed of the bit rotation, and a resulting possibility of transmitting more power to the tool.

3. Less danger of obtaining curved wells. Reliable drilling of inclined wells.

These advantages of the turbine-drilling method are responsible for an increase in well drilling rates in hard formations by more than 15 times, compared with the rotary method.

Changing over from rotary drilling to drilling with a turbo-drill does not require any expensive changes in the design of existing rigs.

The turbo-drill, manufactured in the U.S.S.R., is an underground hydraulic motor. Its housing is connected to the stationary string of drill pipes. The bit is mounted on the rotating shaft of the turbo-drill and, consequently, the drill pipe remains stationary during operation. The drilling fluid, delivered by the slush pumps from the surface, passes into the turbine where the hydraulic energy of the liquid flow is transformed into mechanical power on the turbo-drill shaft.

The hydraulic turbine applied is of the multi-stage axial type. Each stage comprises a stator ring fixed in the housing, and a rotor which rotates with the shaft. The turbine has from 100 to 120 stages. The large number of stages allows considerable power to be developed irrespective of the small overall diameter of the turbo-drill and the comparatively low shaft speeds.

The turbo-drill shaft rotates on rubber sleeve bearings which operate in the drilling fluid without special lubrication. They are well-suited for operation under considerable dynamic loads and in mud-laden drilling fluids.

At the present time, Soviet machinery works manufacture type T12M turbo-drills in 10", 9", 8" and 6⅝" sizes. During operation with mud-laden fluids having a specific gravity of 1.2 g per cu. cm, their turbines have the following performance characteristics:

Type and size of turbo-drill	Number of turbine stages	Fluid flow, litres per sec	Shaft speed at max. power output, r.p.m.	Max. power output, H.P.	Torque on turbo-drill shaft at max. power output, kg/m	Pressure drop, kg per sq.cm
T 12 M 3-10	100	50	610	246	288	56
		60	730	424	415	81
T 12 M 3-9"	120	45	632	216	246	51
		55	772	390	360	76
T 12 M 3-8"	100	35	565	98	124	37
		45	725	206	204	61
T 12 M 3-6⅝"	100	25	660	56	61	38
		30	795	97	88	55

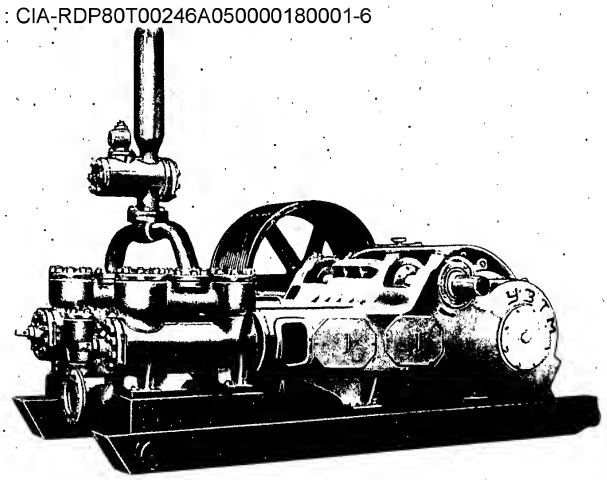
The weight of a T12M turbo-drill ranges from 1 068 to 2 365 kg, the diameter – from 168 to 260 mm, and the total length – from 8 500 to 8 945 mm, depending on the size.

Sectional turbo-drills are used in drilling deep wells of small diameter. They are built in separate sections and are connected in series to form a single turbo-drill. This allows to increase the number of turbine stages as well as the torque on the turbo-drill shaft, and a more advantageous torque to shaft speed ratio may be obtained.

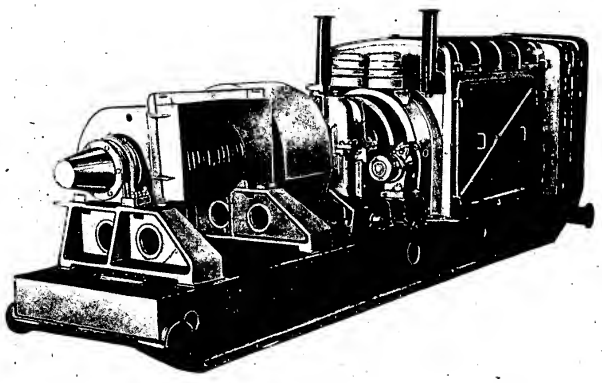
The use of sectional turbo-drills in wells from 2 500 to 3 000 m deep allows the penetration rates to be increased by from 30% to 40%, compared with those available with a single turbine-drill.

Special turbo-drills termed "turbine-coring bits" (type КТД3) are designed for boring prospecting wells where taking rock samples (cores) is required.

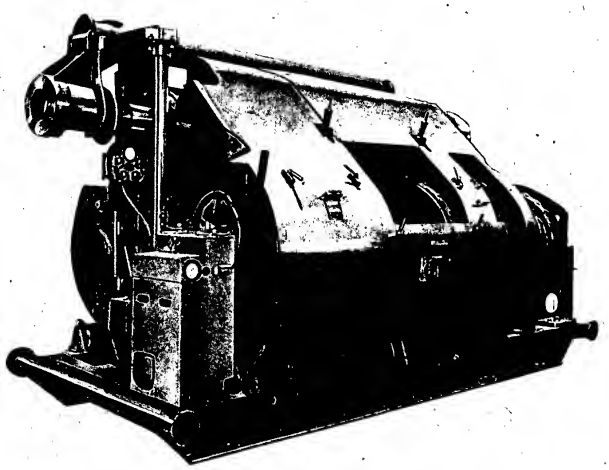
The application of the turbine-coring bit in prospecting well drilling permits coring to be increased by an average of four times in com-



Slush pump, model "У 8-3", for "Uralmash-5 Д" and "Uralmash-3 Д" drilling units



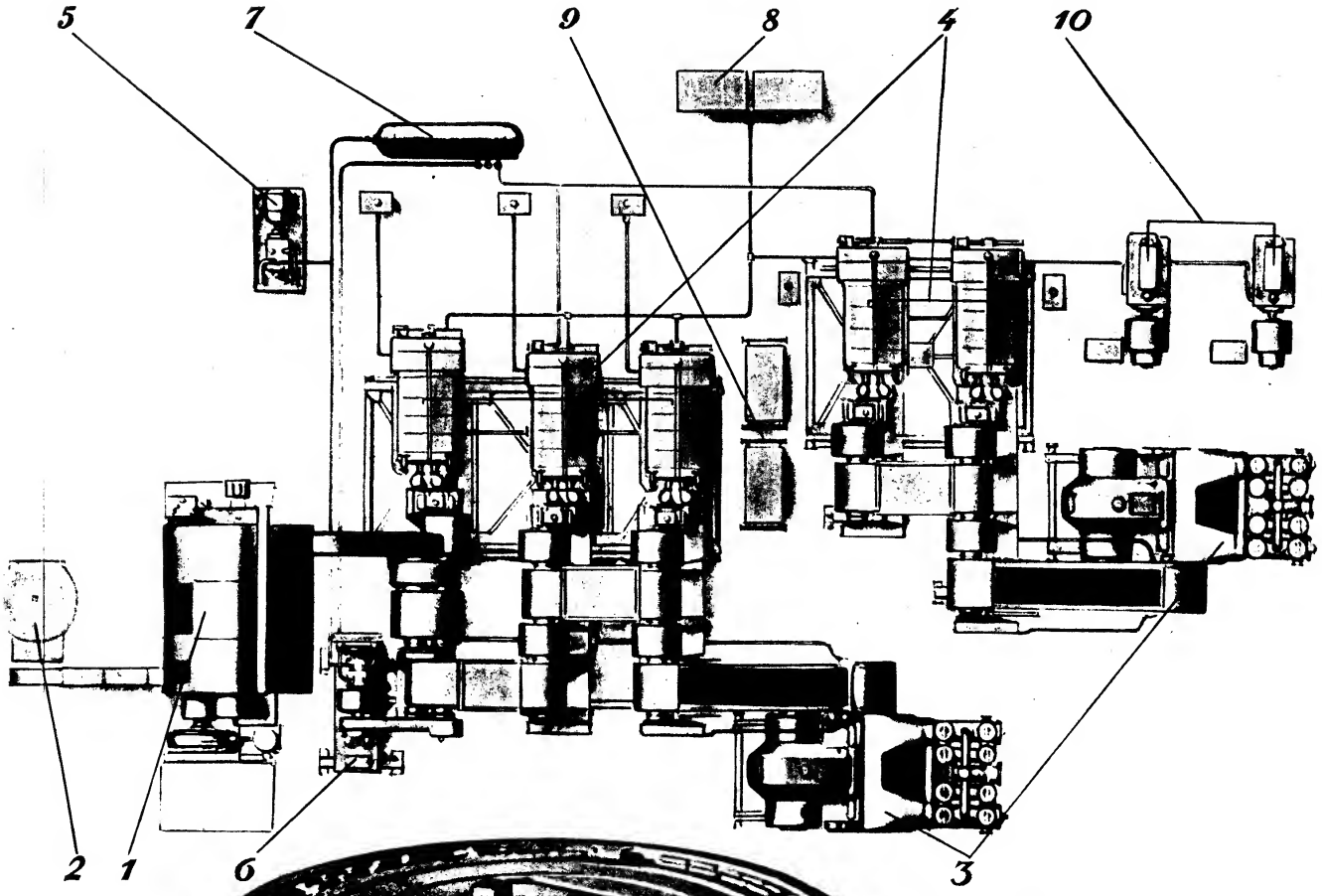
Power set of the "Uralmash-5 Д" drilling unit



Draw works, model "У 2-4-5", for the "Uralmash-5 Д" drilling unit

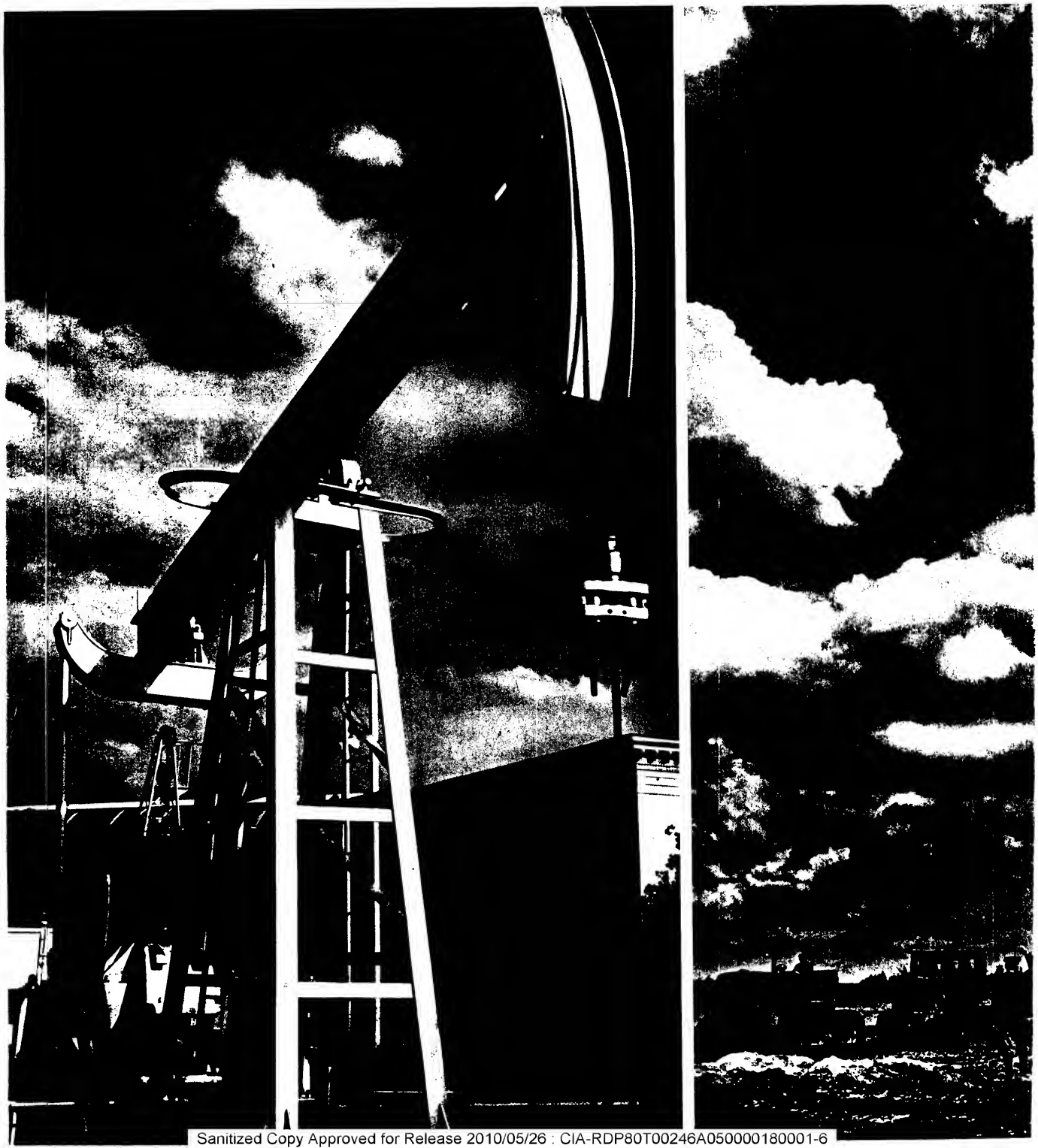
Arrongement of surface equipment in the "Urolmash-5 Д" drilling unit:

1 – Y 2-4-5 drow works; **2** – Y 7-520-2 rotory; **3** – Y 8-3 slush pumps; **4** – five-diesel power plant comprising five model B 2-300 A engines; **5** – compressor unit, electrically driven by Dieselgenerotor set; **6** – compressor unit, belt driven by three, Diesel power group; **7** – oir receiver; **8** – fuel tanks; **9** – storoge botteries; **10** – Diesel-generotor set



Type У 7-520-2 rotary of the "Uralmash-5Д" Drilling Unit

New bridge joining the Rumanian and Bulgarian banks of the Donube
Model CKH-5 pumping unit



Transfer of the drilling unit to a new location

parison with rotary drilling. Besides this the process will be speeded up considerably, as the core barrel with the core is brought to the surface with the drill pipes in place.

The КТД3 turbine-coring bit is available in four sizes: 10", 8", 6⁵/₈" and 5".

Turbo-drills of the smaller sizes are being more ond more widely used. They allow to use lighter portable drilling rigs for prospecting.

The development of turbo-drills in the U.S.S.R. created a problem of designing durable three-roller bits which ore now available in a range of diometers from 4" to 20" and ore employed both for turbine- and rotary-drilling methods. Three-roller bits and bits of the cutting type may be used for drilling in rocks of various hordness classes. The allowable axial load on the bit, depending on its size, ranges from 1 to 30 tons at speeds from 120 to 800 r.p.m. The bits are manufactured of high-alloy steels and have carbide-tipped cutters with various numbers of teeth. The teeth are made of various sizes and have vorious tooth angles. Proper selectian of the cutter will ensure best results when drilling rock af different hardness.

Well cementing units, madels МЦА-1.4/150 ond ЦА-320М, mounted on ЯА3-210 motor-lorries ore recommended for cementing oil wells, restaring the mud circulation, for flushing out sond plugs, ond for squeezing-aut jobs.

Porticular cross-country qualities, rapid erection ond high performance render the ЦА-320М and МЦА-1.4 /150 well cementing units unsurpassoble, under the difficult canditions in oil-fields, for rapid and well-performed cementotion of oil wells.

Christmas-tree equipment, manufactured in the U.S.S.R. and available far expart, is designed far shutting off the well mauths of gas and oil gushers, and far contral and regulation of their praduction. Christmas-tree equipment is available with a test pressure of 300 atm, in 2½", 3" and 3½" sizes. It can be assembled in various arrangements mast suited far ecanamical aperatian of any given well.

Special christmas-tree gate valves, screwed or flanged, are applied for shutting off the well mouths of gushing or campressor wells.

The list af export oil-field equipment includes o wide range of pumping units used for driving deep-well pumps. They are expediently used in aperating ony types of deep-well pumping installotions.

Our service haists, type ЛТ-11-КМ, can be recammended for servicing of oil wells. They provide for handling sucker rods aid deep well pumps, cleaning out sand plugs by boiling, pumping out wells by swabbing as well as for fishing or other auxiliary jobs.

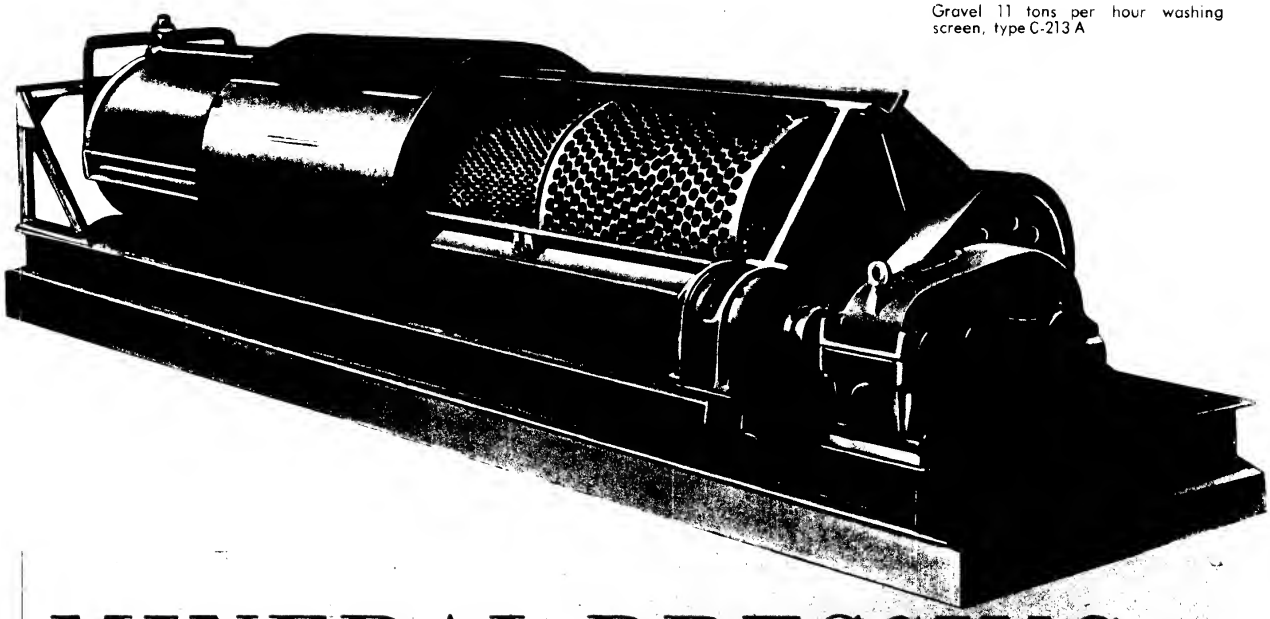
The model ЛТ-11-КМ service haist is mounted on a С-80 tractor. The haist engine has an autput of 92 H.P. at 1 000 r.p.m., the maximum pulling force on the haisting line being 8.8 t.

Flushing units, model ПА8-80, ore ovoiloble for flushing and for squeezing out sand plugs in production wells, also for pressure-testing of wells or pipes, ond for pumping fluid into the well during oerotion.

The flushing pump installed in this unit has a capacity of 12.8 litres per sec. The maximum pressure developed by this pump is 80 kg per sq.cm. The pump is mounted an a model С-80 troctor.

The high quality of Soviet drilling and production equipment is well known ta oil engineers of many cauntries. A license for the manufacture and sale af Soviet turbo-drills has been sold to the "Dresser Industries" (U.S.A.) as well as to the "Haniel und Lueg" and "Salzgitter" companies (F.R.G.).

Prospective Customers ore offered all possible types of well drilling and praductian equipment which are shipped as complete sets, including all required accessories and spare parts to ensure prolonged trouble-free operation.



Gravel 11 tons per hour washing screen, type C-213 A

MINERAL DRESSING MACHINERY

The Soviet machine-building industry manufactures various types of equipment for mineral beneficiation, including crushers, grinding mills, dewatering units, etc. These machines are widely used not only in ore mining, but in the metallurgical, chemical, coal, cement, and other branches of industry as well.

The following is a brief list of some of the types of mineral dressing machines made in the Soviet Union, indicating their fields of application.

COMMINUTION MACHINES

A wide range of machines can be offered for primary, secondary and fine crushing of materials of various hardness: jaw breakers, gyratory and cone crushers, rolls and hammer mills as well as ball, rod and tube mills and edge runners for fine grinding (down to 0.1 mm). Jaw breakers are used for crushing hard rock materials of 100 to 1 500 mm (4" to 60") size.

In the CM type single-toggle jaw crusher the swing jaw is hung on an eccentric shaft and is braced below by a single toggle. CM Crushers feature a high crushing ratio, making it possible to combine primary and secondary crushing in a single unit. The corrugated face plates of the crusher jaws, are made of high-quality steel. The crusher design provides for inversion of the face plates after one side is worn out, this practically doubling their lifetime.

ККД gyratories and КСД cone crushers, designed for crushing hard rocks 200 to 1 500 mm (8" to 60") in size, have large capacities, the ККД—for primary and the КСД—for secondary crushing.

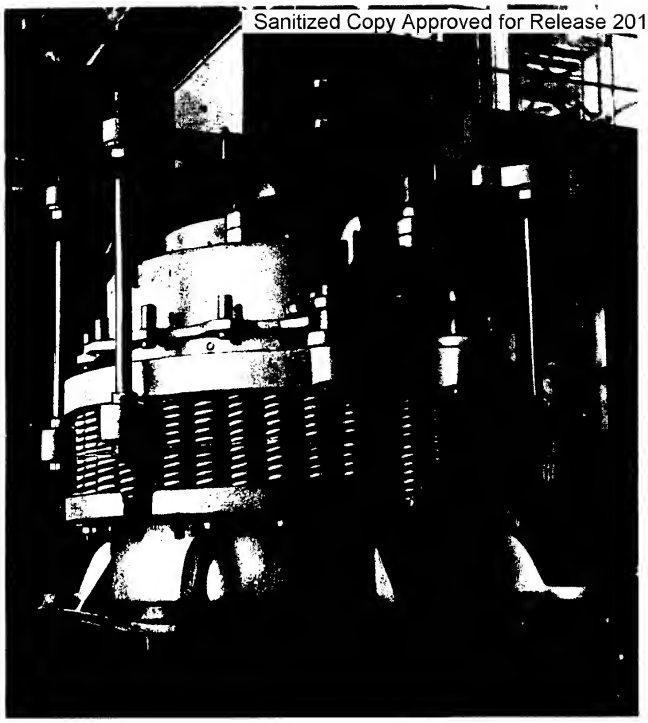
Shorthead crushers are recommended for fine crushing to particle sizes of 8 to 4 mm ($^5/_{16}$" to $^5/_{32}$").

Secondary crushing may be accomplished with roll units consisting of one, two or four rolls with smooth surfaces for hard rocks or spiked surfaces for brittle rocks.

Single- and double-rotor hammer mills are best suited for crushing medium-hard and not very tough materials with comparatively small moisture contents. The advantages of hammer mills are simple design, high capacity, small overall dimensions and light weight.

The U.S.S.R. manufactures and exports type ШМ single- and double-section ball mills, type ШС rod mills and tube mills for fine grinding of materials of various hardness.

The material is ground in these mills by means of steel balls or rods. In rod mills the material is not overground, and they are therefore recommended for ores containing brittle minerals. Tube mills are made with three, four or five sections for dry or wet grindling.



Cone crusher for medium crushing. Crushing cone diameter — 1 200 mm, type **КСД**

EQUIPMENT FOR SIZING AND CLASSIFICATION OF CRUSHED MINERALS

The sizing and classification equipment, exported by V/O "Mashinoexport", includes shaking (vibrating), unbalanced, eccentric, impact and other types of screens, mechanical (spiral, rake, bowl, vibrating bowl) and hydraulic classifiers, hydroseparators, cones and hydrocyclones.

The **БКГ** high-speed linear-motion shaking screen has found wide application for sizing and dewatering. The merits of this screen are large capacity, high efficiency and balanced design.

Mechanical classifiers are used for classifying material ground in mills or for dewatering.

КС spiral classifiers are trough-like tanks with one or two shafts carrying spirals rotating in them for transporting the sands which settle to the bottom of the tank. Two types of spiral classifiers are built – the high-weir type–for coarse classification and the submerged-spiral type–for fine classification.

Automatic discharge desliming or hydraulic cone classifiers, type КК, are used for desliming sand-clay materials and for dewatering sands and slimes.

CONCENTRATION EQUIPMENT

A wide range of machines for gravity, flotation, magnetic and other methods of mineral concentration is exported by the U.S.S.R.

The simplest and cheapest method of concentrating loose rocks by gravity is washing them in disintegraters and drum washers. These machines are used extensively for concentrating iron and manganese ores, sand, gravel, phosphorites, and alluvial ores of rare and noble metals.

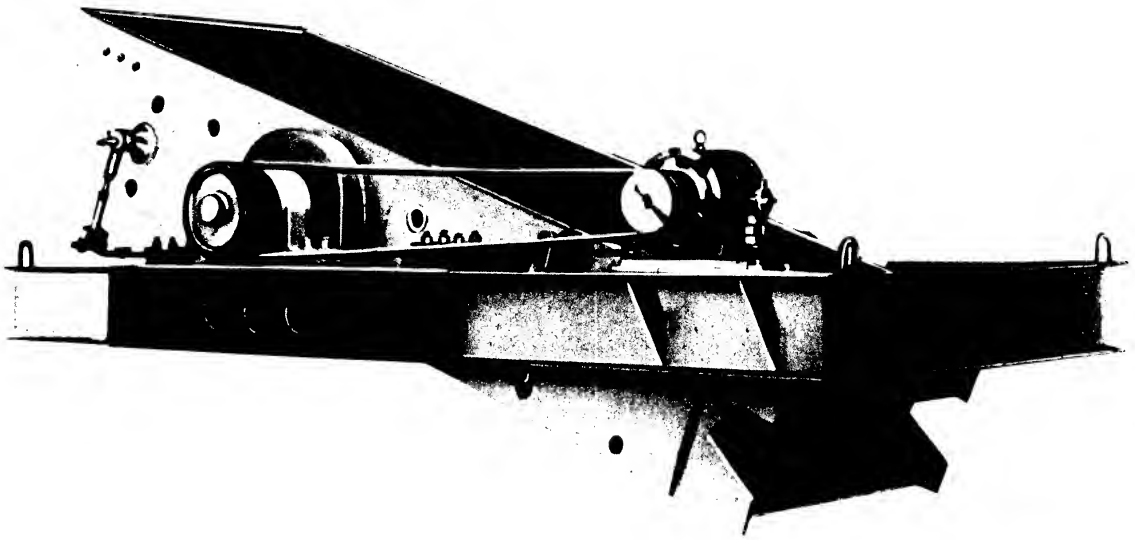
Easy-washing ores are concentrated in С-213А gravel-washing trommels.

С-type drum washers are used for gold-, platinum- and tinbearing alluvial ores. The washer consists of unperforated drum for disintegrating the rock and a cylindrical rotary classifying screen (trommel).

Soviet-made moving- and fixed-screen jigs of the plunger, compressed air (Baum) and diaphragm types are recommended for concentrating ores of ferrous, non-ferrous and precious metals of 50 to 0.25 mm (2" to 60 mesh) particle size, and for coals and anthracites of 100 to 0.5 mm (4" to 32 mesh) size. These machines feature simplified process control by adjustment of the amount of hydraulic water added as well as the speed and displacement of the plunger or diaphragm.

The ОВМ diaphragm-type high-speed jig is designed for wet concentration of ores of the 12 to 0.1 mm ($\frac{1}{2}$ to 150 mesh) size range. The jig consists of a tank partitioned into two boxes, the partition being fitted with a diaphragm which creates the water pulsions. Hydraulic water is added to each box from a header.

Two-screen spring gyratary sizing screen, type **ГГР** for caarse classification and segregation of anthracite bituminous and gas coal and far ather minerals. The unit pracesses material up to 300 mm. in size. Different qualities are segregated in the marketable sizes



The МБОМ plungerless machine consists of jigging and compressed air compartments. The upward and downward movements of the water are caused by compressed air. The МБОМ machine is compact, light and is furnished with special automatic refuse unloaders.

The ПОМ jig is recommended for cleaning fine coal. In this machine the mineral mixture is separated in air. The pulsing action of the air on the coal causes the heavy particles to settle to the bottom and the light ones to rise to the top. The particle-size range is from 13 to 0.5 mm ($^1/_2$" to 32 mesh).

The СС concentrating (shaking) table, used for separating finely ground minerals of 4 to 0.1 or 0.07 mm ($^3/_{32}$" to 150 or 200 mesh) particle size, consists of a deck which is given a reciprocating movement. The light (valueless) particles are washed down by a lateral flow of water, and the heavy ones move lengthwise along the table. Tables are manufactured with sand and slime decks. These tables are also used for agglomeration processes.

Of the flotation equipment manufactured in the U.S.S.R. special note should be made of the high-capacity "Mechanobr" machine, which consists essentially of a steel trough separated into cells with an impeller in each. The special design of the diffuser within which the impeller rotates ensures a copious supply of air.

A special mechanical flotation machine of original design can be furnished for coal flotation. This machine is fitted with double impellers; the pulp is sucked into the cell by the lower part of the impeller, and the air is drawn in through a stand pipe. It provides for the removal of large volumes of concentrate.

V/O "Machinoexport" also exports various items of equipment for magnetic separation (dry and wet), including: low-intensity separators with magnetic fields not over 4 000 oersted and high-intensity separators with fields up to 18 000 oersted.

DEWATERING EQUIPMENT FOR CONCENTRATES AND FINISHED PRODUCTS

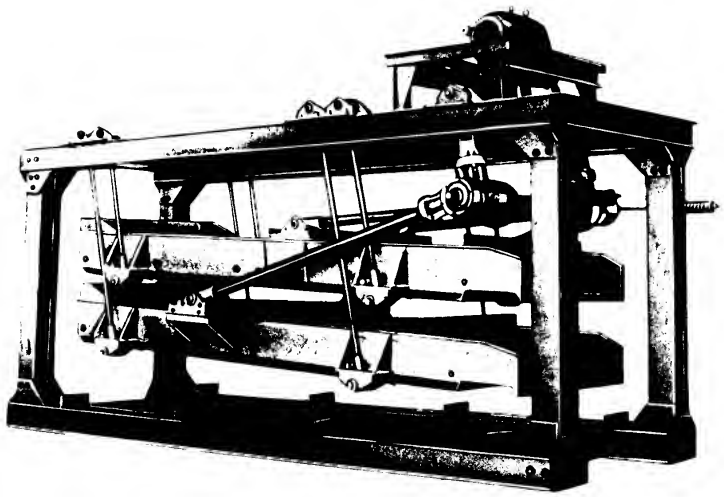
Soviet machine works monufacture various types of dewotering units for export, including: dewatering elevators, screens, conveyers, filtering and precipitating centrifuges, pyramidal or mechanical thickeners, cones and settling tanks, hydrocyclones, vacuum filters, driers, and accessory equipment (pumps, blowers, etc.).

For dust collection at concentration mills, sintering plants and smelters where dry ore products are treated, V/O "Machinoexport" exports cyclones and multi-cyclones, electric precipitators, bag filters, and other equipment.

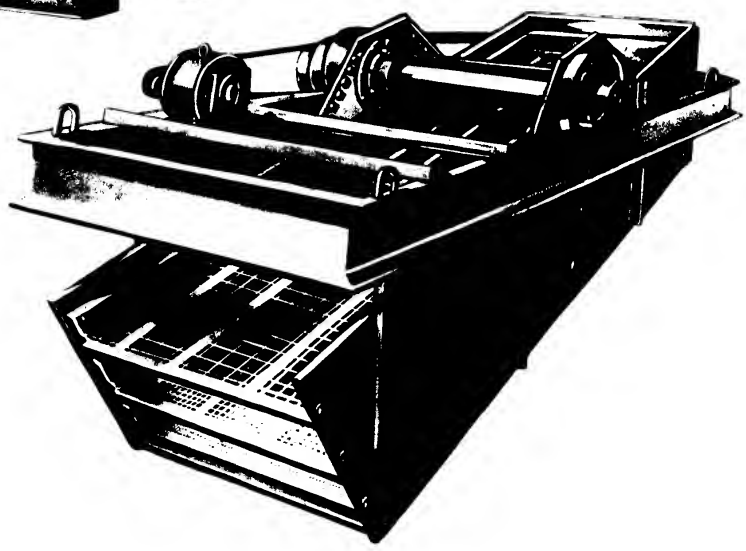
At present the U.S.S.R. supplies various mineral beneficiation machines and plants to People's China, India, Czechoslovakia, Viet-Nam, Rumania, Poland, Albania, Burma, Argentina, Iran, Afghanistan, and other countries.

Foreign Users have invariably found these machines and plants to be of high quality.

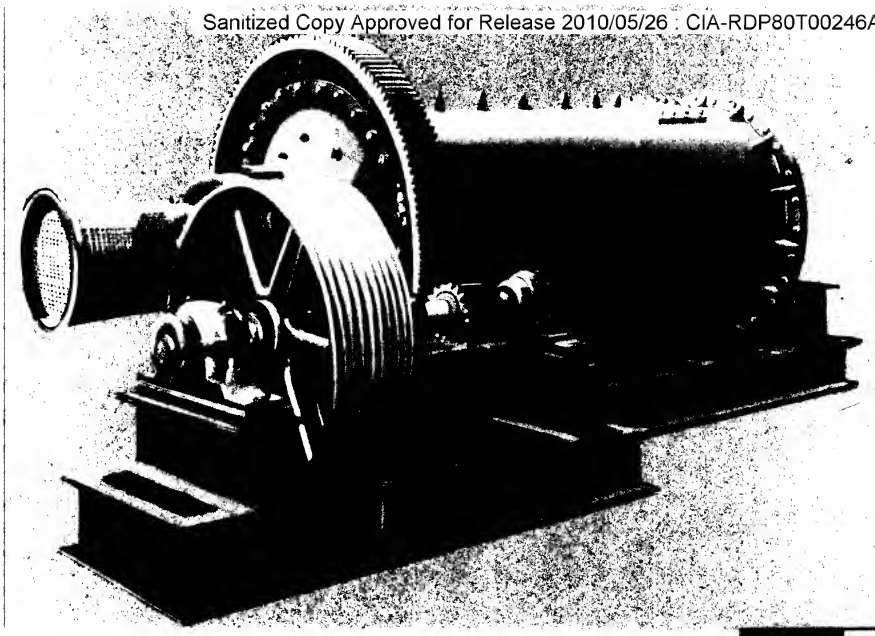
Mineral dressing machines and plants are exported by V/O (Vsesojuznoje Objedinenije) "Machinoexport".



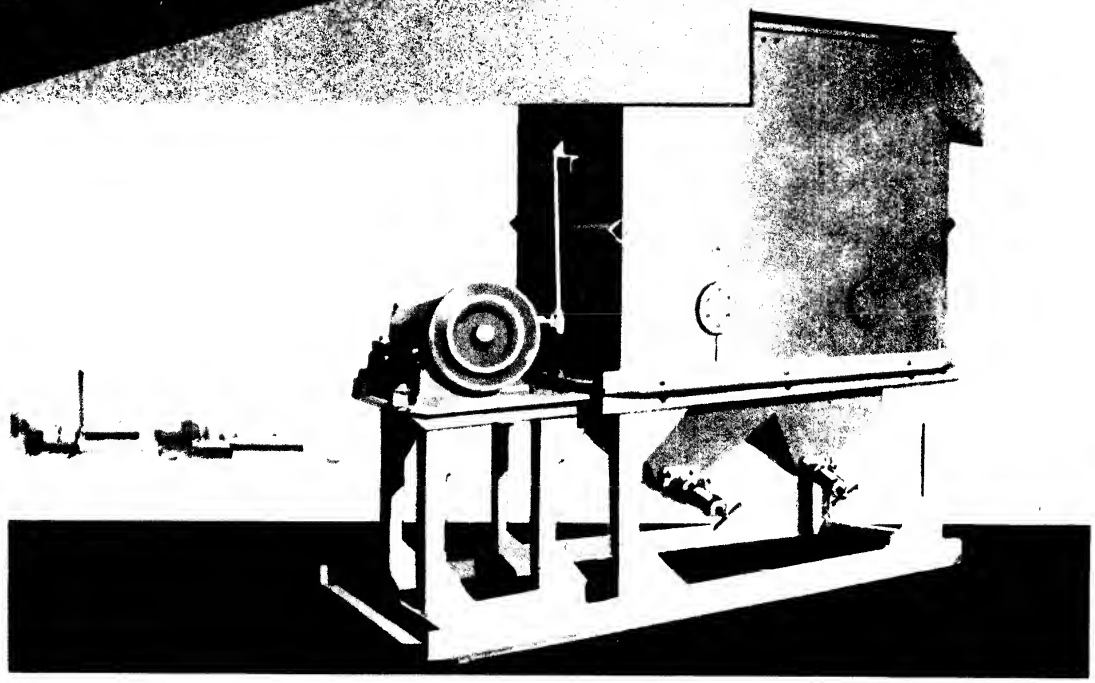
High-speed shaking screen, type БКГ for screening coal and anthracite, coarse classification before cleaning, final classification in the marketable sizes and for dewatering of large and medium size coals. Capacity — 7—53 tons per hour



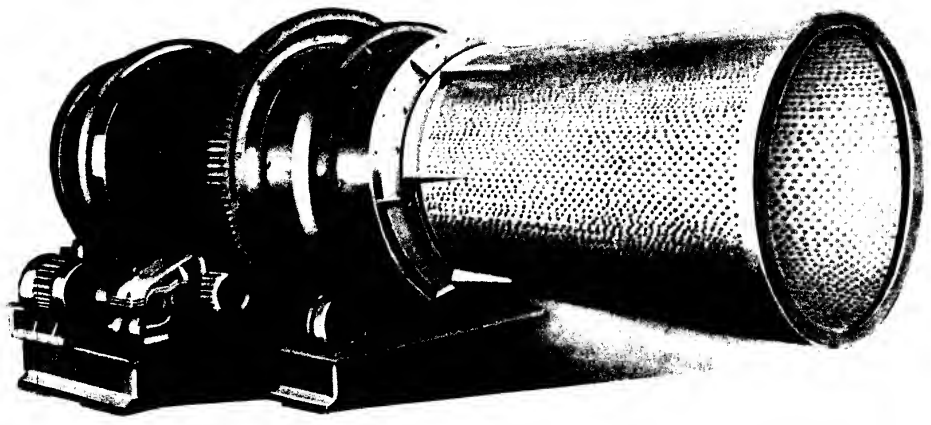
Eccentric inclined three-screen unit, model C-96 A. Output 16 tons per hour



One compartment rod mill 1500 × 3000 *mm*, model CM-176, output 7–16 tons per hour



High-frequency two-box jig for ore preparation, model OBM, capacity 30 tons per hour



Model IC-1300 drum washer 1300 × 2800 *mm* for disintegration and classification of sands. It is used chiefly in tin and gold mining

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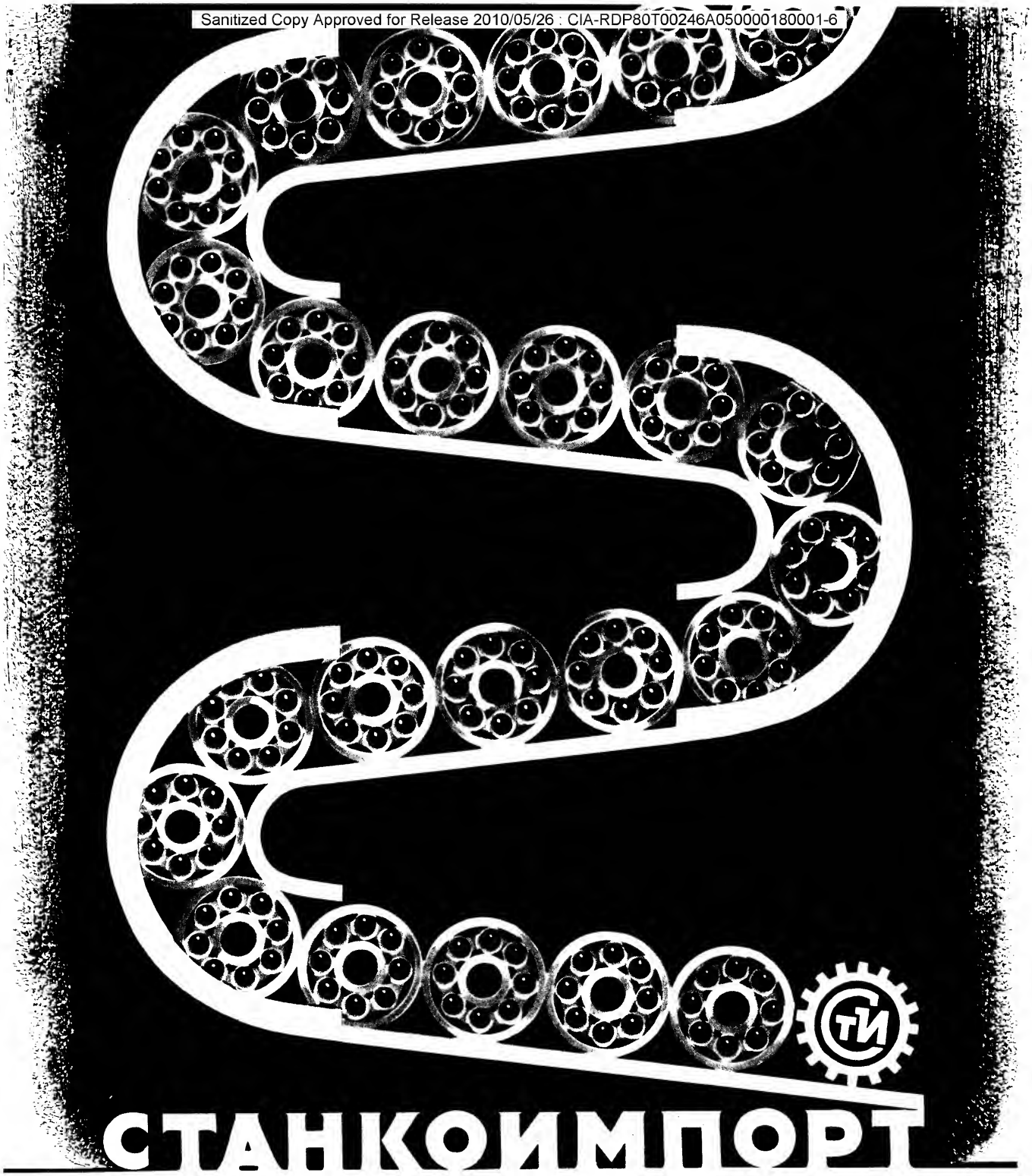
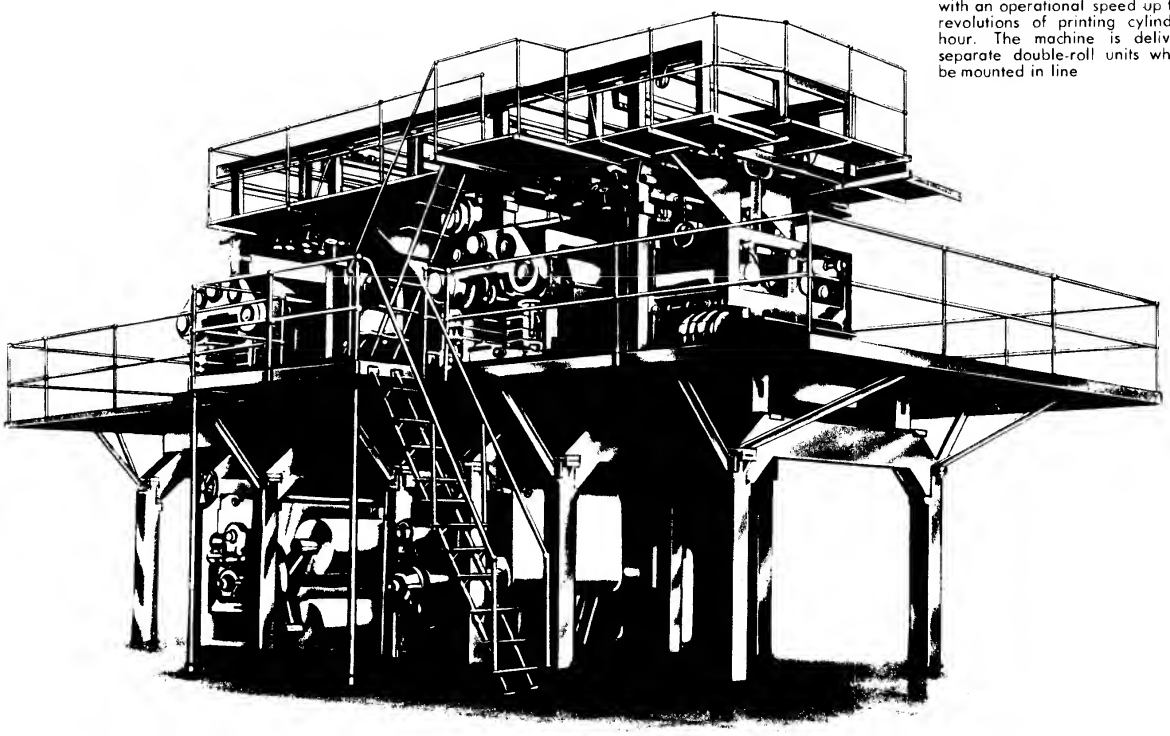
СТАНКОИМПОРТ



BEARINGS: HIGH QUALITY SURFACE FINISH, ACCURACY OF DIMENSIONS, LONG LIFE

Our bearings ensure HIGH SPEED,
ACCURACY, DEPENDABILITY AND LONG LIFE TO THE MACHINES

Ball and roller bearings are exported from the SOVIET UNION by V/O "STANKOIMPORT", Moscow, G-200



Multi-roll newspaper press, model ГА, with an operational speed up to 30000 revolutions of printing cylinders per hour. The machine is delivered in separate double-roll units which may be mounted in line

PRINTING EQUIPMENT

The machine-building works of the U.S.S.R. manufacture different types of printing equipment which fully comply with the requirements of modern technique, e. g., equipment for composing rooms, process and stereotyping departments, pressrooms and binderies.

The printing equipment of Soviet production has acquired widespread acknowledgement on foreign markets. Thus in 1957, the Soviet Union exported twice as many machines for the graphic industries than in 1955 and three times more than in 1954.

Our printing machines are in use and give complete satisfaction in printing establishments of different countries – Austria, Finland, Norway, Sweden, Denmark, Turkey, Iran, Poland, the German Democratic Republic, Czechoslovakia, Rumania, Bulgaria, Albania, and others.

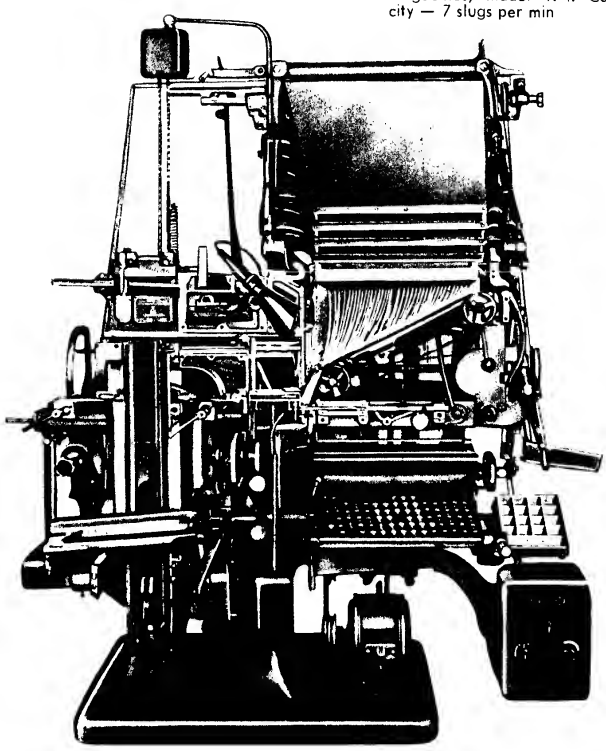
Below are given some facts on certain of the machines for the graphic industry exported by the Soviet Union. In the field of composing room equipment the U.S.S.R. exports composing and slug-casting machines, composing and type-casting machines, machines for casting characters and space material, proof presses, etc.

Our composing and slug-casting machines, models H-4, H-5 and HMC enjoy a wide-spread reputation. They are designed for composing and casting slugs from 1.5 to 7 picas long in type body from 6 to 12 points. The capacity of these machines is up to 7 slugs per minute. All the operations connected with the casting of slugs, their finishing and the distribution of matrices into their proper magazines are effected automatically.

The machine, model H-4, is fitted with four magazines and one distributing bar. The machine, model H-5, is equipped with two magazines and two distributing bars. It makes possible to mix in one line matrices from two magazines and distribute the matrices simultaneously into two magazines.

The new HMC machine occupies a minimum of space, it is simple and sturdy in design, and it is very easy to control and maintain. This

Semi-automatic campasing and perforating machine, model MK, with a capacity af 10000 characters and more per hour



Semi-automatic composing and slug-casting machine with faur magazines, madel H-4. Capacity — 7 slugs per min

machine is widely used in middle and small capacity establishments producing newspapers, booklets and so on, and may be used as well in movable printing plants.

Foreign Clients may be offered the composing and perforating machines, model MK, type-casting automatic machines, model MO, and compressor units, model BK, for feeding the machines with compressed oir. These machines in combination make possible the composition af any desired text in type of 6, 8, 10 or 12 points with a size of composition from 2 to 10 picos.

For effecting separate casting operations in composing rooms the following machines may be recommended: machine for casting slugs, for display composition, model CK; automatic machine for casting blanks and spaces, model Э; type-casting machine, model НШЛ, with a warking speed up to 180 castings per minute; proof presses with electrical drive for make-up and for taking proofs from newspaper and book columns, flat stereos and plates.

The composing type-casting and slug-casting machines are equipped with devices for autamatic temperature control and with interlocks bringing the machine to a standstill if troubles occur during running. The aforementioned machines are manufactured for any desired height of type and with keyboard ar matrix frame schemes to suit the requirements of the Client. Matrices of types of different designs and height may be furnished together with the machine or by separate order in any desired quantity.

In the field of pressroom equipment should be mentioned the multi-unit newspaper press, model ГА, for producing long runs of 4-, 6-, 8-, 12- and 16-page newspapers. The multi-unit press comprises separate double-roll printing units placed in line on an upper deck and serviced from a common gollery. Each double-roll unit is provided with two roll stands, two printing sections, and two folders. Each double-roll unit is designed on the plan: printing section-folder. Thanks to this disposition great flexibility in operation is obtained. The number of double-roll units may be varied to suit the Clients' requirements.

On the machine, model ГА, it is possible to print in two colours the 1st and 4th poges of 4-page newspapers, the first and last pages af 6- and 8-page newspapers and the 1st, 3rd, 14th and 16th pages of 16-page newspapers.

The machine is equipped with interlocking and braking devices, a control panel, newspaper counters and other devices and instruments ensuring a trouble-free, dependable, and safe operation. At the Clients' request the machine may be furnished complete with an ink pump unit, conveyers, and other auxiliary equipment.

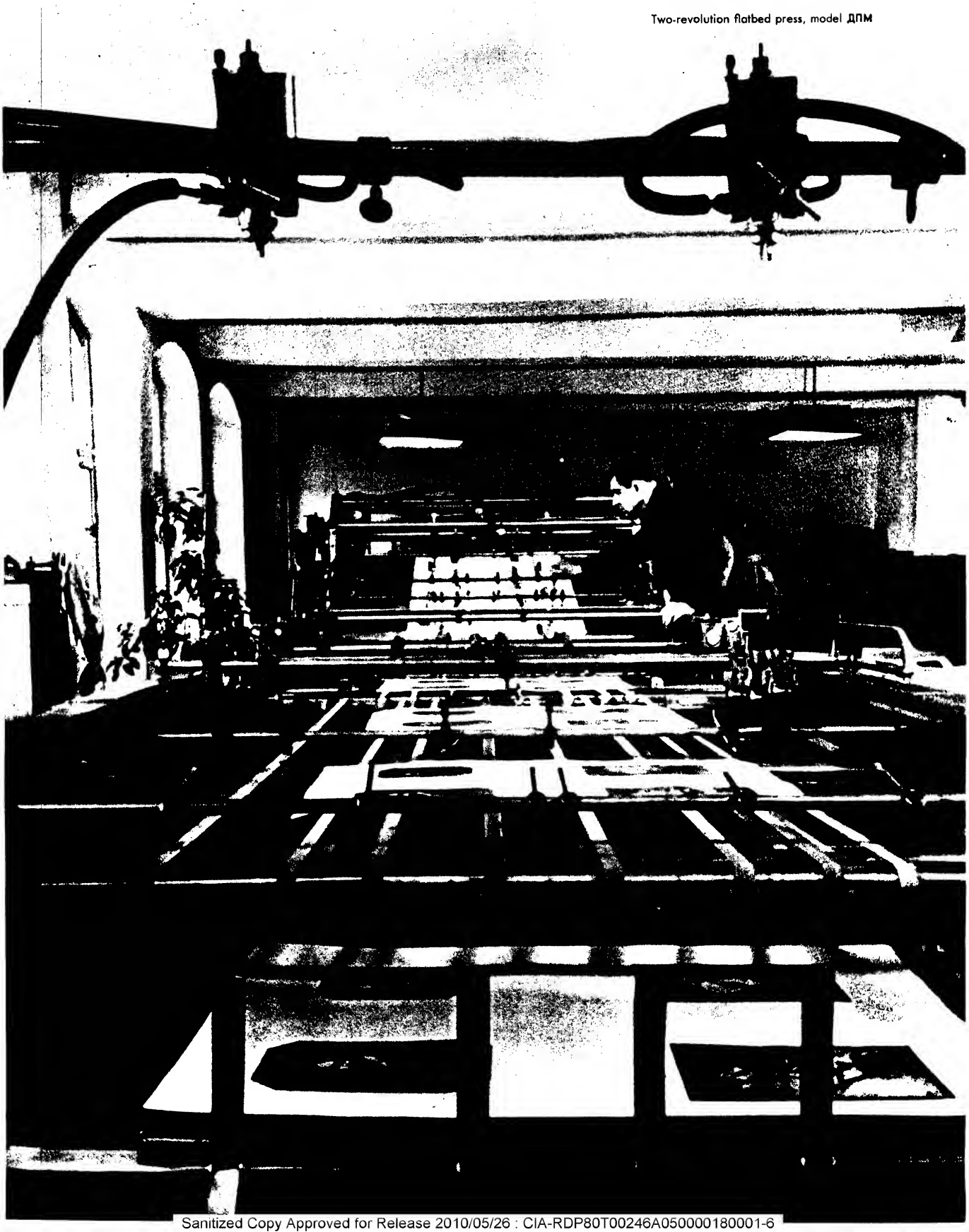
The rotaries, models 2ДР and 2ОР, are supplied far printing newspapers in short runs. The double-roll machine, model 2ДР, is designed for printing 2-, 4-, 6- and 8-page newspapers. This press comprises two single-roll sections and is arranged either for separate or for joint operation of the twa sections with a common folder. The machine is equipped with automatic throw-offs which stop the machine in cose af web breakage.

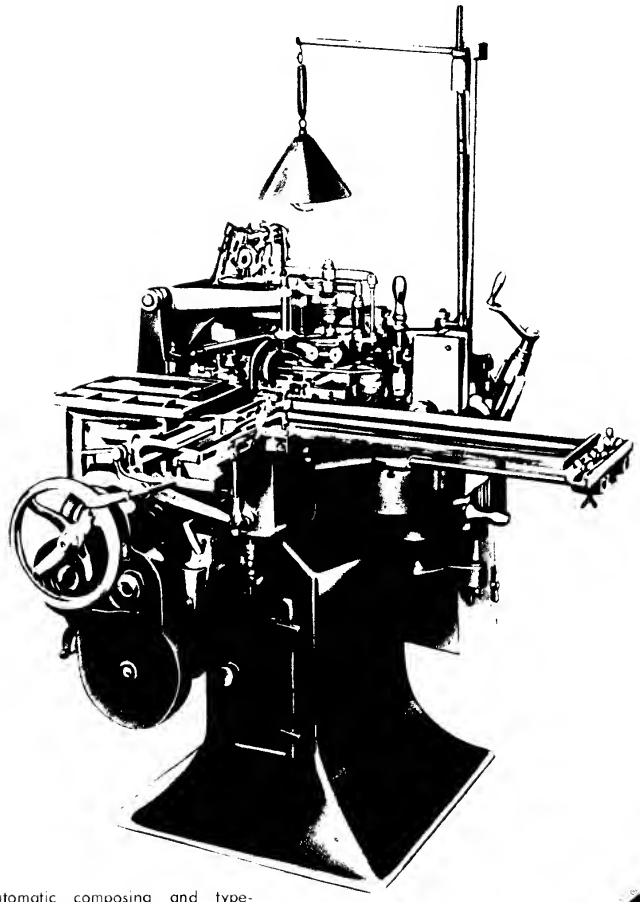
The single-roll machine, model 2ОР, is similar to one section of the machine 2ДР. It is designed for printing 2-, 4- ond 8-page newspapers.

At the request of aur Clients we may supply all the stereotyping equipment necessary for operation in conjunction with the newspoper presses, models ГА, 2ДР and 2ОР.

Widely known and highly reputed is aur set of printing equipment specially designed for producing smoll size 2- ond 4-page newspapers and booklets. This set comprises the following five machines: composing slug-casting machine, model НМС; rotary printing press, model ПРГ; hydraulic motrix molding press, type МП-150; semi-automatic

Two-revolution flatbed press, model ДПМ





Automatic composing and type-casting machine, model MO, operated by a paper tape preliminarily perforated on the MK machine. Machine capacity from 8000 to 9000 types per hour. A matrix frame of any scheme may be supplied according to the requirements of the Client. The machines, Models MO and MK, may be delivered with compressor units

stereo casting mold, СЛП; combined stereotype finishing machine, model МСГ.

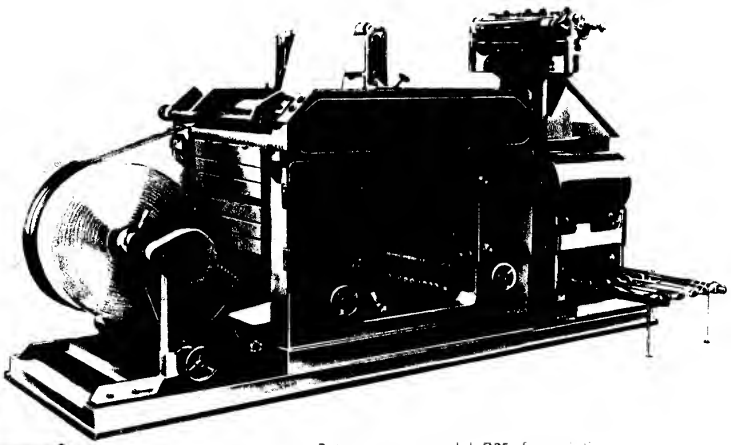
For installation and maintenance of the aforementioned five machines a space of not over 20 sq.m is required. The total weight of the machines is 6 500 kg.

The ratary press, model ПРГ, is arranged for printing 2- and 4-page newspapers in size of 29.7x42 cm and 8- and 16-page booklets in sizes of 29.7x21 cm and 14.8x21 cm, correspondingly.

High-quality printed products may be obtained on the book and magazine rotary press, model СРК. This machine comprises a roll stand, two inking units, two printing units, an anti-set-off device, a folder and a drive. The paper web unrolling from the roll travels across a steam chamber and is adequately humidified.

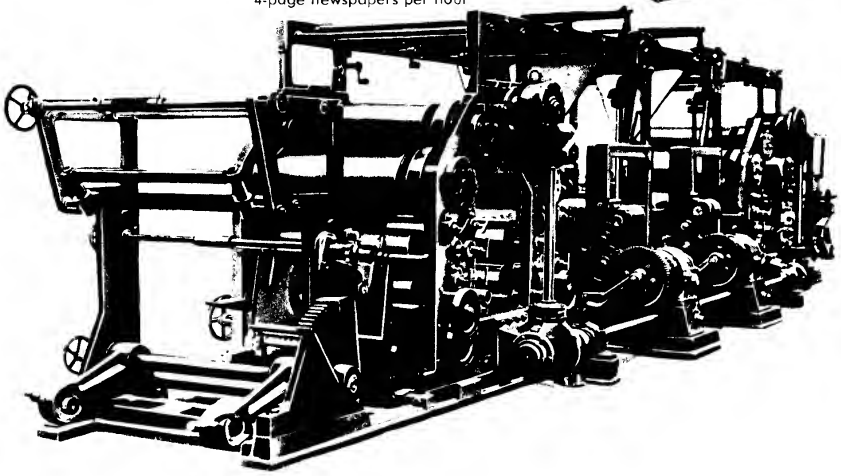
The machine is equipped with an automatic brake and a device which stops the machine in case of web breakage. Each plate cylinder accommodates eight stereo plates, i. e., four around the circumference and two along the generatrix. The rotational speed of printing cylinders is 8 460 rotations per hour. The folders provided on the machine permit folds of different kinds to be made.

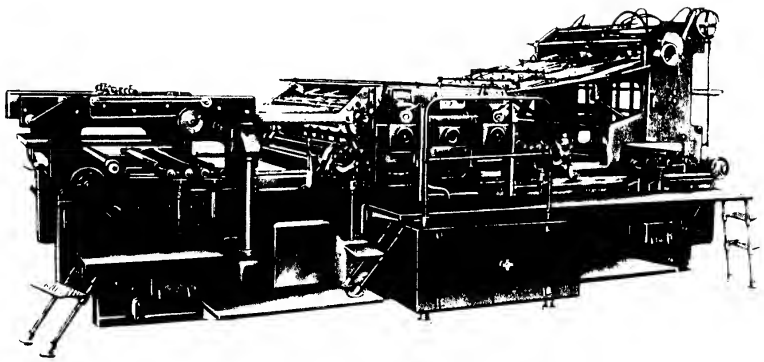
At the request of the Client the machine may be furnished with stereotyping equipment and two folders: one–for book production and the other–for magazine production.



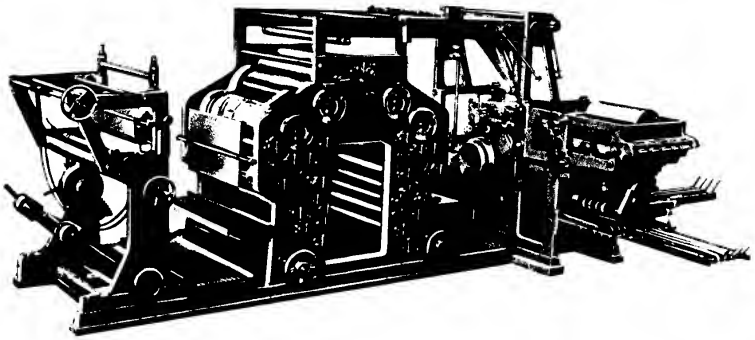
Rotary press, model ПРГ, for printing small-size newspaper

Double-roll rotary press, model 2 ДР with a capacity up to 59000 copies of 4-page newspapers per hour



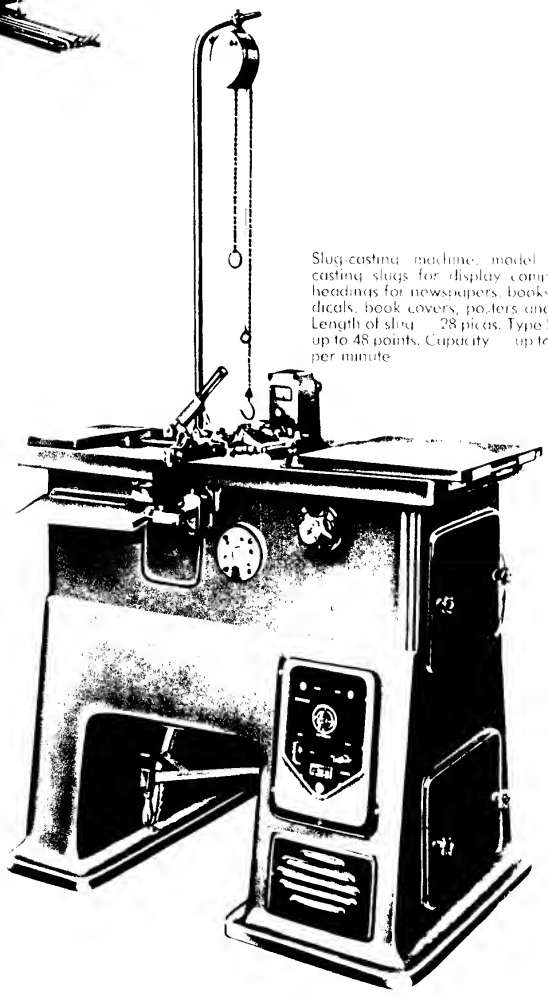


Two-revolution flotbed press for two-colour printing, model ДД, equipped with suction feeders



Book and magazine rotary press, model 3 РК, fitted with two folders: one — for illustrated book production and the other — for magazine production

Slug-casting machine, model СК, for casting slugs for display composition: headings for newspapers, books, periodicals, book covers, posters and so on. Length of slug — 28 picas. Type body — up to 48 points. Capacity — up to 6 slugs per minute



The two-revolution flotbed presses, models ДД and ДДС, are designed for printing multicolour art work. They are provided with suction feeders and interlocks which disengage the electric motor if a sheet fails to be fed. The capacity of the machine is 1 800 impressions per hour. The ДД machine is furnished with a built-in delivery, while the ДДС machine is provided with an extended high-pile delivery.

The two-revolution flatbed presses, models ДПМ and ДПП, are equipped with a low-pile and a high-pile delivery of printed sheets. The maximum size of paper is 84x108 cm.

Thanks to the accurate register of impressions when printing subsequent colours, the machines may be successfully used for printing multicolour work. The hourly capacity of these machines is 2 100 impressions.

A high demand exists for the following types of printing machines produced in the U.S.S.R.: the stop-cylinder flatbed press, model МП, for a size of paper 46x60 cm with hand feed; platen presses, model ТГ-1, of the heavy type, for a paper size 30x46 cm; platen presses, model ТШ, of the light type, for a paper size of 30x42 cm.

The two-colour sheet-fed offset press, model ПОЛ-1, is designed for printing multicolour illustrations — posters, reproductions, labels, etc. The capacity of the machine is up to 6 000 impressions per hour. Maximum size of sheet 86x108 cm. The machine is equipped with a high-pile suction feeder and ample inking arrangements with four inking

rollers. An interlock is provided which throws off the impression if sheet feed is interrupted ond reduces the mochine speed when the impression is not applied.

The following equipment moy be delivered for photo-engroving shops: horizontol process cameros in sizes of 700x800 mm ond 500x600 cm; verticol process cameros 400x400 mm, with outomotic focussing; verticol whirlers for cooting offset plotes of moximum size 1 150x1 400 mm ond 660x730 mm; zinc plotes of 500x650 mm in size; pneumotic printing fromes for plotes 500x650 mm, ond other types of equipment.

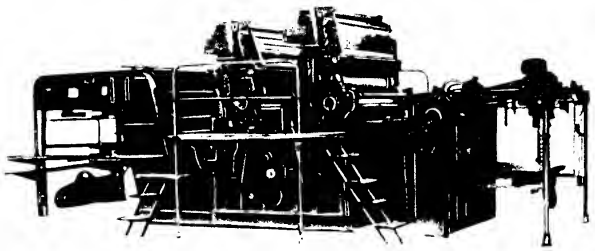
The process comeros ore furnished complete with lenses, orc lomps, ond different occessories.

The Soviet Union exports various types of bookbinding equipment for performing operations connected with the preporotion ond finishing of books ond the production of book covers. The following mochines deserve porticulor mention: various poper cutters, buckle folders, with on operotionol speed of 98 m per min; knife folders, with on operoting copocity of 4 000–5 700 sheets per hour; multi-stotion gothering mochines; sewing ond wire-stitching mochines.

The combined book compressor, rounder ond bockliner, model БО-2, is widely used ond highly oppreciated by our foreign Clients. It hos been modernized ond will be now produced under the type БТГ. This mochine is provided with o feeder for feeding the books ond performs outomoticolly the following operotions; compressing the books, rounding ond backing, posting the muslin, headbond ond poper lining on the bock of the book. The mochine is equipped with electric heoting elements, interlocks, ond three control ponels locoted ot points convenient for the operotor. The copocity of the mochine is up to 2 000 books per hour.

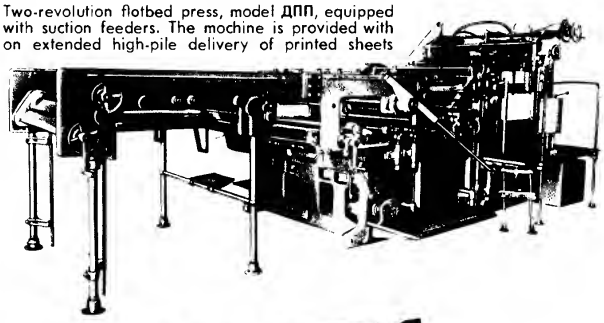
A greot demond exists for vorious kinds of stonding presses, book compressors ond rounders, boord cutters, presses for roll leof embossing ond impressing on book covers with binder's inks; outomotic mochines for glueing end popers ond other equipment which moy be successfully used in ony estoblishment of the grophic industry.

All orders for printing equipment ond demonds connected with the ordering of these mochines should be oddressed to V/O "Machino-export".

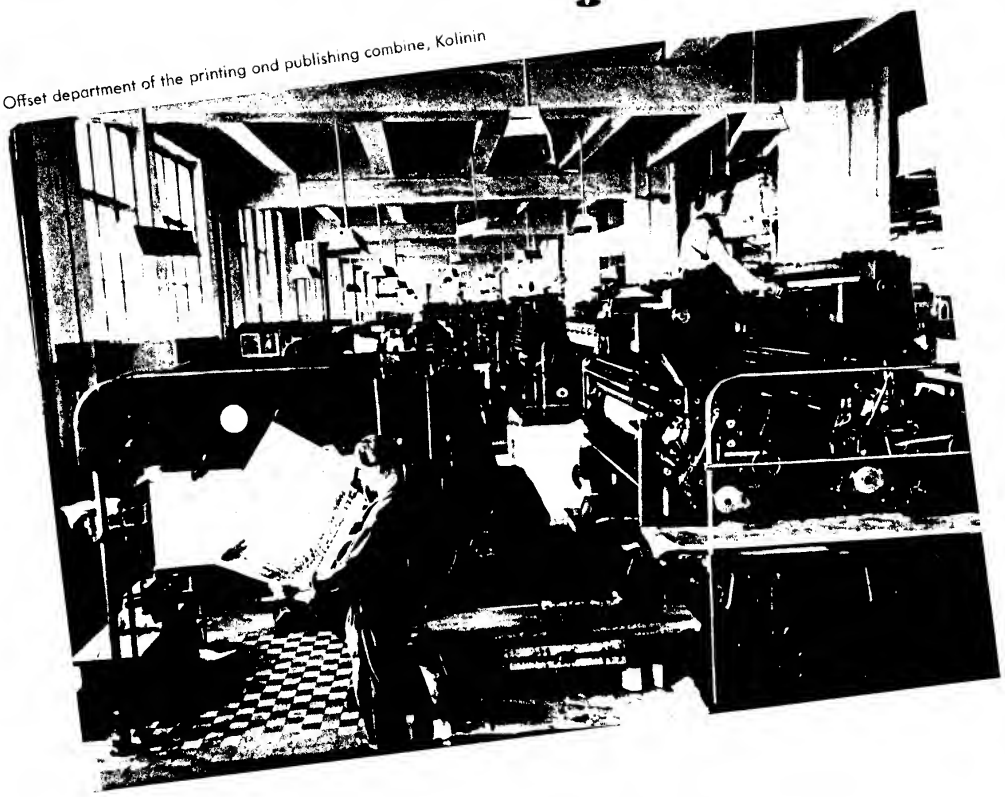


Two-colour sheet fed offset mochine, model ПОЛ-1, with o copocity of 6000 impressions per hour

Two-revolution flotbed press, model ДПП, equipped with suction feeders. The mochine is provided with on extended high-pile delivery of printed sheets



Offset department of the printing ond publishing combine, Kolinin



EXCAVATORS

Multi-bucket conveyer on the construction of the Kora-Kum desert irrigation conol. Background — excavator, model Э-1252

A large number of excavators are manufactured by the machine-building works of the Soviet Union to satisfy the requirements of the national economy and for foreign trade shipments. They find wide application in the mining industries, on industrial and civil construction sites, in agriculture and in other branches of the national economy.

In the last years, Soviet engineers have designed a comprehensive series of new excavators of original design, with shovel capacities ranging from 0.15 to 20 cu.m.

We trust that the descriptions of certain excavator models given below, will be of service to foreign business men.

THE HYDRAULIC SINGLE-BUCKET EXCAVATOR, MODEL Э-153, with a shovel capacity of 0.15 cu.m, is mounted on the "Byelarus" tractor (with a Д-36 engine developing 37 H.P. at 1 400 r.p.m.). It is most expediently used for earthwork and loading operations on small construction jobs and in agriculture. When furnished with convertible working equipment and other attachments, the Э-153 excavator can be used in performing the following operations: excavation in quarries with seam depths up to 1.6 m, digging trenches up to 2 m in depth, loading, laying pipes in trenches, small ground bevelling operations, cleaning building sites of construction refuse, etc. When furnished with crane equipment, it will hoist loads up to 1.5 t.

The working cycle of this excavator is 15 sec. for a swing of 90°, when equipped with a dipper shovel. For a back hoe the cycle is about 22 sec.

The Э-153 excavator is of small overall dimensions and weight. It has five travelling speeds in a range from 4.56 to 12.95 km per hr for forward travel and 3.42 km per hr for reverse travel. It is equipped with outriggers, operated by hydraulic cylinders, to provide stability in operation.

The pumps of the hydraulic system, which operate at a pressure of 76 atm, are driven from an increase gearing unit by means of power take-off from the tractor transmission gear-box.

THE UNIVERSAL FULL-SWING SINGLE-BUCKET EXCAVATOR, MODEL Э-652, has a shovel capacity of 0.65 cu.m. With crane equipment it has a hoisting capacity up to 10 t. The excavator is equipped with a КДМ-46 Diesel engine which develops 96 H.P. at 1 000 r.p.m.

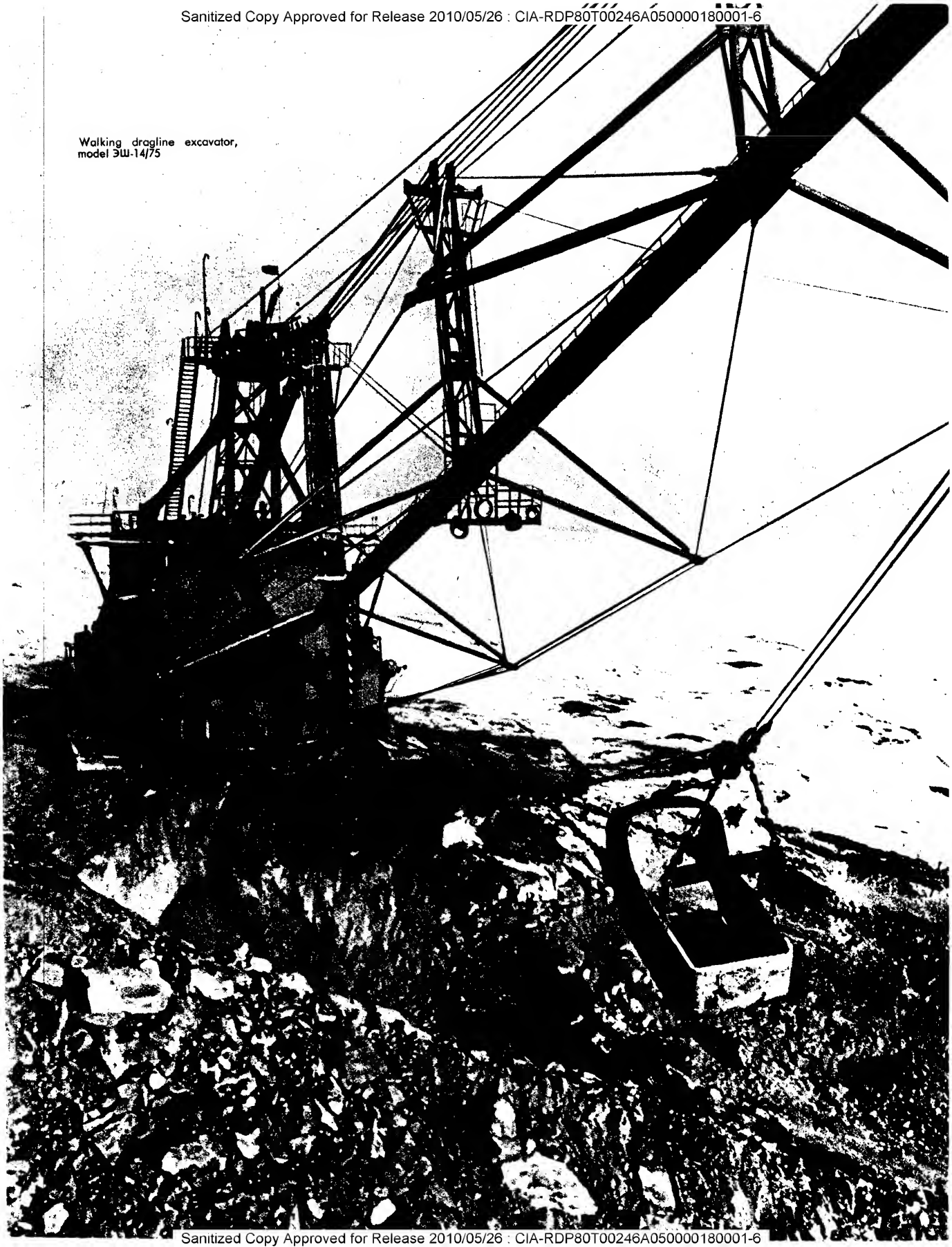
The sturdy design of all parts of the excavator, high working speeds and facile pneumatic controls provide for a performance up to four working cycles per minute with the dipper shavel.

The large set of available convertible equipment (dipper shovel and back hoe, dragline, clam-shell, crane gear and pile-driver outfit as well as equipment for loosening frozen soil) renders this excavator indispensable for hydrotechnical, industrial and civic construction as well as for road building, and other operations.

The low specific ground pressure (0.67 kg per sq.cm), the two travelling speeds (1.6 and 3 km per hr) and the ability to run up grades up to 22° pravide far high manoeuvrebility and capability of passing through difficult country.

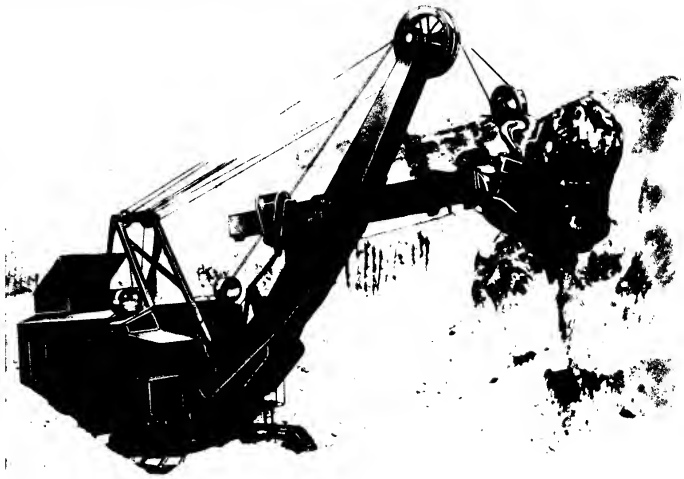
THE SINGLE-BUCKET EXCAVATOR, MODEL Э-801, with pneumatic controls and Diesel drive is designed for the same operations as excavatar, model Э-652. The weight of the machine with a dipper shovel equals 27.6 t. The excavator is equipped with crane gear with a hoisting capacity up to 15 t. The shovel capacity is 0.8 cu.m and the hoisting speed is 0.51 m per sec. The clamshell with a capacity of 0.75 cu.m has a hoisting speed of 0.873 m per sec.

Hydraulic single-bucket excavator, model Э-153

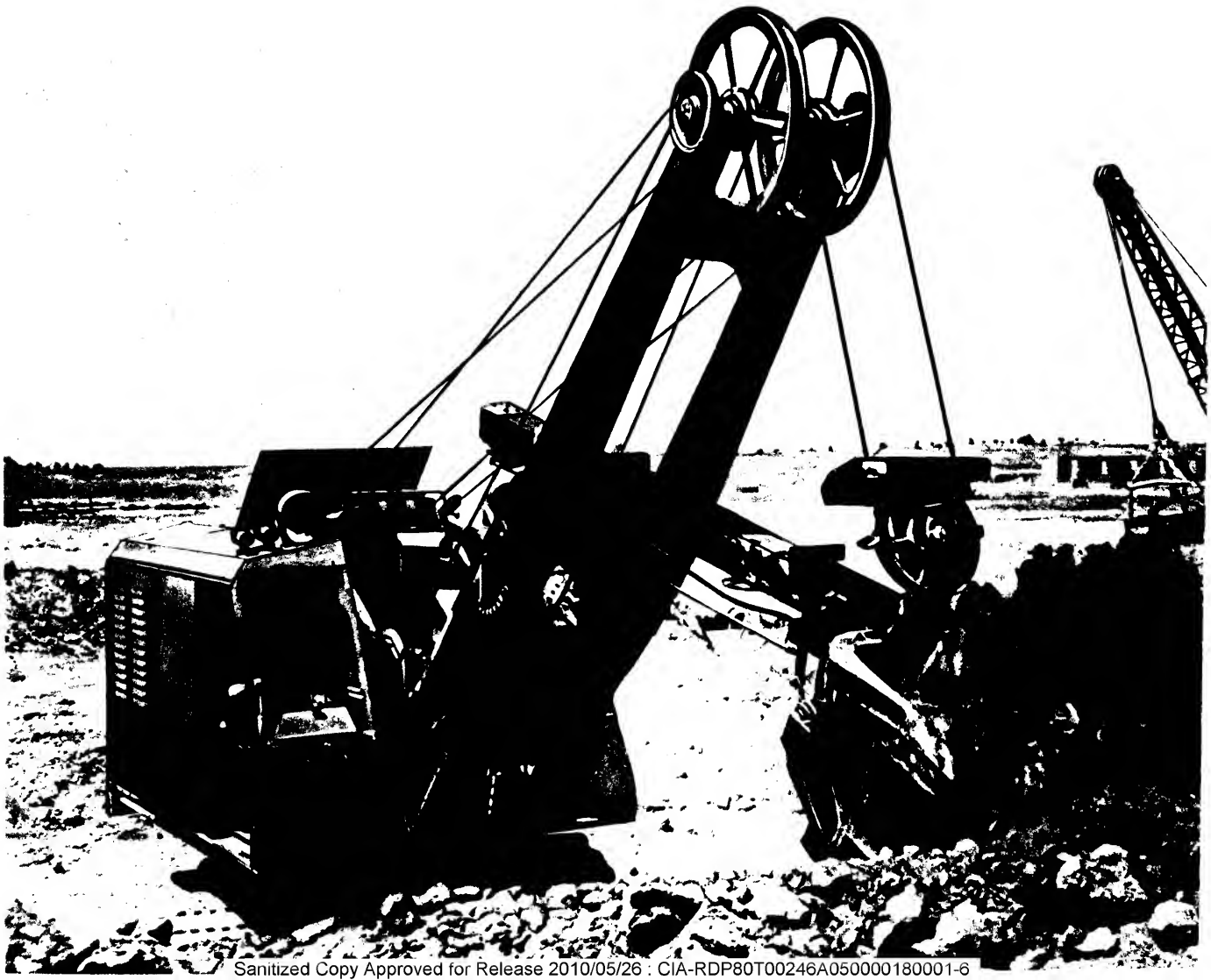


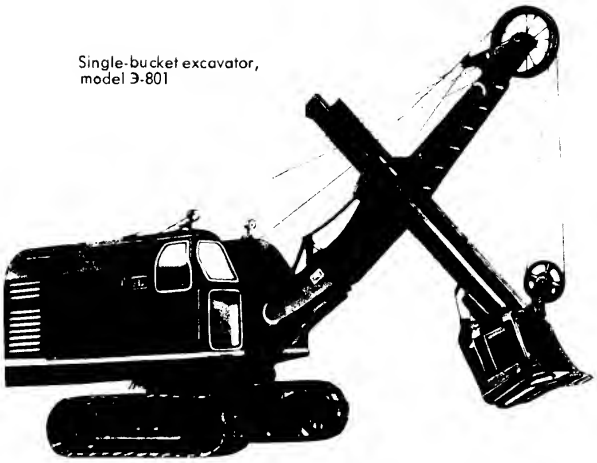
Walking dragline excavator, model ЭШ-14/75

Full-swing excavator, model Э-1252



Single-bucket excavator, model Э-2001





Single-bucket excavator, model Э-801

The gear train of the excavator provides for independent drive of the boom drum as well as for combined swing with load luffing.

On special order the excavator may be furnished with convertible equipment: dipper shovel, dragline, clamshell and crane gear.

THE UNIVERSAL FULL-SWING SINGLE-BUCKET EXCAVATOR, MODEL Э-1252, is expediently used in the construction of various industrial, hydrotechnical and civil enterprises as well as road building. It is used for quarry excavation, for digging pits, trenches and canals, for cleaning small streams, building embankments and dikes as well as handling operations.

The Э-1252 excavator is equipped with a dipper shovel with a capacity of 1.25 cu.m, a dragline bucked with a capacity of 1.0 cu.m, a clamshell with a capacity of 1.5 cu.m, and pile-driver gear. When operating with crane gear, the hoisting capacity is 15 t with a boom reach from the axis of rotation of 4.5 m.

The Э-К51 excavator is an alternative design of the Э-1252 model. It has an electrical drive.

THE SINGLE-BUCKET EXCAVATOR, MODEL Э-2001, is of the single-motor electrical full-swing type with pneumatic controls. It is widely used on construction sites with a large amount of earthwork as well as for quarrying operations. The shovel capacity is 2 cu.m and the electric motor has an output of 145 kW.

When operating with crane gear, the hoisting capacity is 50, 20 and 8 t for boom reach of 4½, 8 and 10 m, respectively. The excavator, equipped with a dipper shovel, weighs 80 t.

Full-swing single-bucket excavator, model Э-652

The following models of powerful single-bucket excavators are available for carrying out large volumes of earthwork in difficult soils:

Model ЭКГ-4 – quarry excavator with shovel capacity of 4 cu.m
Model ЭКГ-8 – quarry excavator with shovel capacity of 6 to 8 cu.m
Model ЭВГ-4 – stripping excavator with shovel capacity of 4 cu.m
Model ЭВГ-6 – stripping excavator with shovel capacity of 6 cu.m
Model ЭВГ-15 – stripping excavator with shovel capacity of 15 cu.m

THE MODELS ЭКГ-4 and ЭКГ-8 EXCAVATORS are full-swing electrical-drive quarry shovels on crawlers. They are used in the ore and coal mining industries, building materials industry, and also for construction of large hydrotechnical and other enterprises.

The high production capacity of the ЭКГ-4 and ЭКГ-8 excavators is due to their high speeds, perfected control system, sturdiness, reliability, and working capacity of the chief units and parts.

They have cutting heights of 10.2 and 12.2 m, dumping heights of 6.6 and 8.4 m, digging radii of 14.6 and 17.0 mm and motor outputs of 250 and 500 kW, respectively.

The Soviet machine-building plants manufacture high-powered electrical-drive walking dragline excavators. They include EXCAVATORS MODELS ЭШ-4/40*, ЭШ-6/60, ЭШ-14/75 and ЭШ-20/65. These types of walking dragline excavators have very large production capacities. They are designed, mainly, for removal of soil up to the 4th category, inclusive, for stripping operations in which no other transporting facilities are required, for dumping rock either in the excavated area or on the bank of the cut. Walking dragline excavators are also very effectively used for digging deep trenches with rock dumping at the sides of and for erecting high embankments from side cuts.

Excavotors, models ЭШ-4/40 and ЭШ-6/60, may be used for loading earth into transport facilities, if required. The low mean specific ground pressure, up to 1 kg per sq.cm, allow walking dragline excavators to be used an weak marshy soils. Walking dragline excavators can be used for cuts of considerable depth and width, they have no need for transport facilities for removing the soil.

At the present time, walking dragline excavators with a bucket capacity of 14 cu.m and a reach of 75 m are being used on gigantic construction jobs in the Soviet Unian. They are fully-electric controlled. The ЭШ-14/75 excavator is furnished with 48 electric motors having a total power of 7 000 kW. The production capocity of this excavator is phenomenal, it removes more than 4 million cu.m of soil per year, replacing the labour of 10 000 shovelmen.

*The numerator in the model designation refers to the bucket capacity in cu. m, and the denominator is the boom length in m.

Quarry excavator, model ЭКГ-4

The ЭШ-14/75 excavator weighs 1 440 tons.

In excavating building material quarries, laying water or gas pipelines and laying power or communication cables, multi-bucket chain-type trenchers are used. Soviet multi-bucket trenchers have proved their excellent qualities in the construction and cleaning of reclamation and irrigation canals.

UNIVERSAL TRENCHER, MODEL ЭТУ-353, is designed for digging trenches of rectangular or stepped-type cross-section in soils up to the 3rd category, inclusively, containing hord inclusians up ta 200 mm in size. The ЭТУ-353 trencher is a self-propelled machine on crawlers with an inclined bucket chain. Soil is dumped by means a belt conveyer.

The standard model of the ЭТУ-353 trencher digs trenches with vertical walls up to 2.5 m deep and from 0.8 to 1.1 m wide. It can be furnished with interchangeable equipment for digging trenches with vertical walls up to 3.5 m deep and from 0.8 to 1.1 m wide; trenches with stepped walls up to 2.5 m deep with a top width of 3 to 2 m and bottom width up to 1.1 m or of a depth of 3.5 m and from 3 to 9 m ot the ton and up to 1.1 m at the bottom, as well as ditches up to 0.75 m deep for railways and soil roads.

The trencher may be used on soft ground if special attachments are mounted on the track lugs of the crawler and a bucket cleaner is fastened on the bucket chain.

For work in city streets, special cover plates fastened to the track lugs protect the asphalt streets fram damages. The maximum specific ground pressure of the trencher during operation is from 0.51 to 1.14 kg per sq.cm.

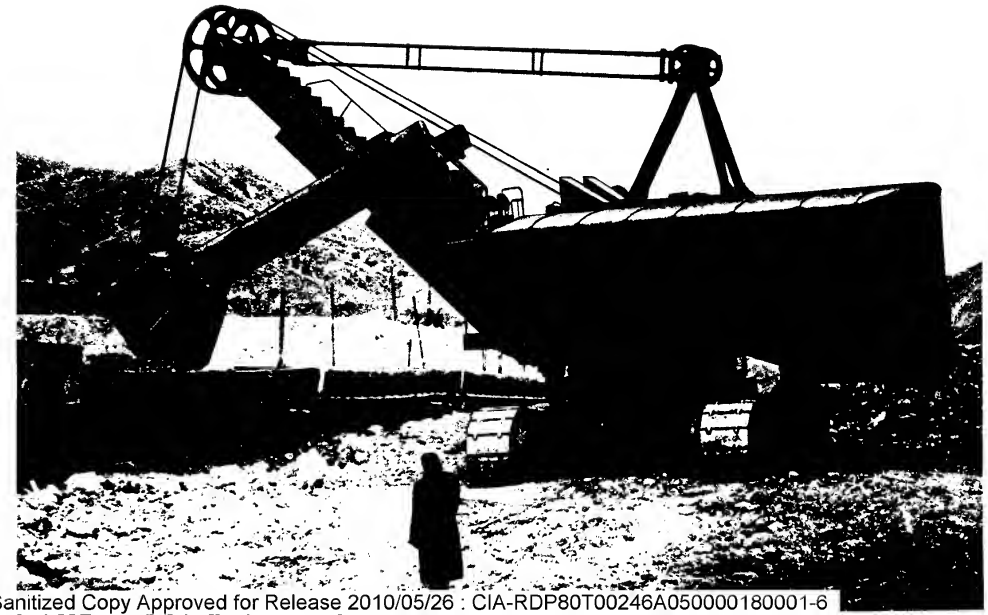
All of the machine controls are compactly arranged at the driver's position.

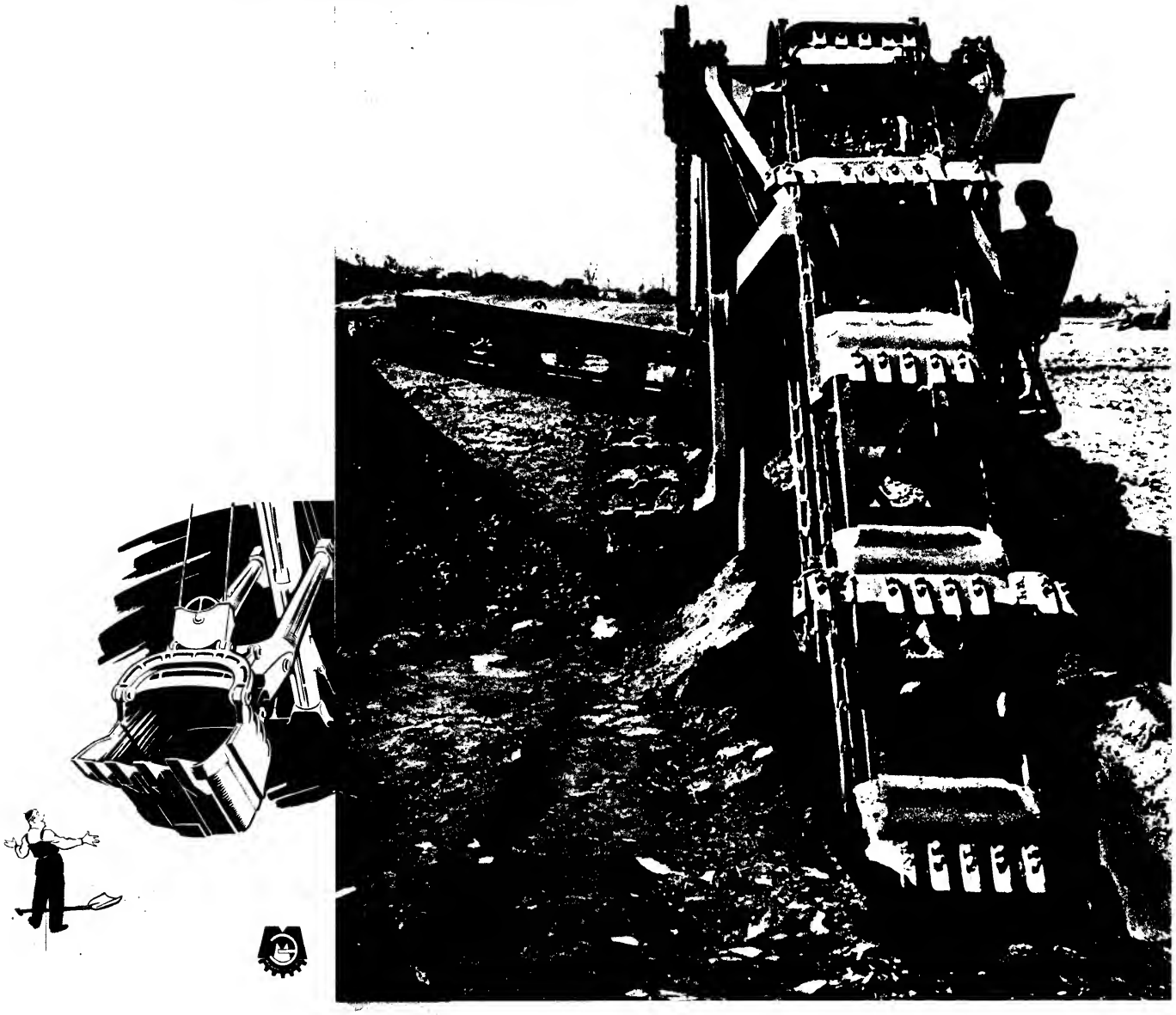
Soviet excavators are being most successfully employed in Argentina, Afghanistan, Albania, Burmc, Bulgaria, Greece, Iran, India, China, Koreo, Poland, Czechoslovakia, Finlond, and many other countries.

Due to their original design, high production capacity and reliability in operation. Soviet excavators are in great demand among foreign Customers.

Excavators are exported from the U.S.S.R. by the Vsesojuznoje Objedinenije "Machinoexport" in Moscow.

Quarry excavatar, madel ЭКГ-8





Universal multi-bucket trencher, model ЭТУ-353

MOBILE CRANES

Mobile cranes, lorry-mounted or self-propelled on pneumatic tyres, with lifting capacities ranging from 3 to 25 t are built by the Soviet Union for export.

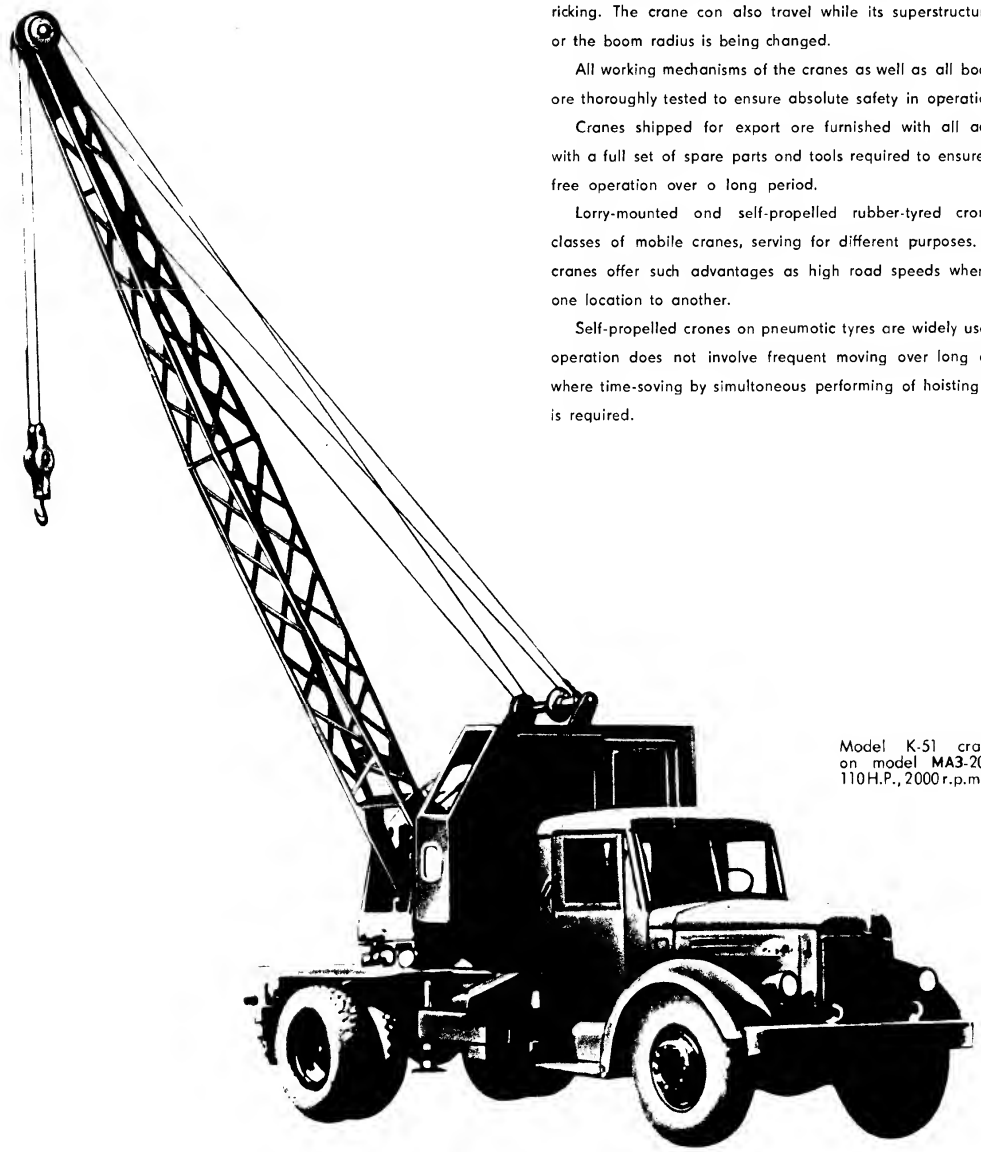
The mobile cranes produced in the U.S.S.R. are of sturdy design, thus easily withstanding all forces which arise during operation. They ensure high handling and travelling speeds, and possess excellent monoeuvring features. Hoisting can take place simultaneously with slewing or derricking. The crane can also travel while its superstructure is revolving or the boom radius is being changed.

All working mechanisms of the cranes as well as all booms and hooks are thoroughly tested to ensure absolute safety in operation.

Cranes shipped for export are furnished with all accessories and with a full set of spare parts and tools required to ensure their trouble-free operation over a long period.

Lorry-mounted and self-propelled rubber-tyred cranes form two classes of mobile cranes, serving for different purposes. Lorry-mounted cranes offer such advantages as high road speeds when moving from one location to another.

Self-propelled cranes on pneumatic tyres are widely used where their operation does not involve frequent moving over long distances, and where time-saving by simultaneous performing of hoisting and travelling is required.



Model K-51 crane. Mounted on model MAZ-200 lorry with 110 H.P., 2000 r.p.m. Diesel engine

For the convenience of our Customers brief descriptions and specifications of some mobile crane models are given below.

LORRY-MOUNTED CRANES

Well proved in universal application is the **model ЛА3-690 Lorry-Mounted Crane.** It has a maximum lifting capacity af 3 metric tons at a radius of 2.5 m from the centre of rotation and with jacks applied. If used without jacks, it is still possible to raise loods up to 1 t at the some rodius. This crane is designed for various loading and unloading jobs on construction sites, at warehouses and railroad freight stations, and in shop yards. It is also widely used in city services.

This crane develops speeds up to 50 km per hr over paved highways. It can travel laden at speeds up to 10 km per hr.

When raising loads the crane operation is synchronized with unloading of the rear axle springs by means of a special stabilizer with a screw mechanism. The crane design makes it possible ta raise or lawer the load smoothly, at rates ranging from 2.1 to 12 m per min. Derricking from maximum to minimum radius requires from 29 down to 5,2 sec.

The **model K-51 Lorry-Mounted Crane** is designed for handling miscellaneous material and erection work in industry, agricultural, city construction, and transport. It has a lifting capacity of 5 t, and can be used in conjunction with a grab bucket of 0.5 cu.m capacity. This crane is equipped with a 7.35-m boom. An additional intermediate sectian makes it possible to extend the boom to 11.75 m. The lifting capacity of 5 t can be utilized using the 7.35-m boam within a radius of 3.8 m fram the centre of rotation and with jacks applied. With the 11.75-m baom and secured by jacks, the crane can handle loads up to 3 t, with a radius of 4.5 m.

If used withaut jacks, the crane permits handling of loads up to 2 t with the 7.35-m baom or up to 1 t with the boom extended to 11.75 m.

The hoisting speed is 18 m per min for the 7.35-m boom, or 27 m per min. far the 11.35-m boam. The cranes speed is up to 30 km per hr on highways. All mechanisms af the crane are driven from the lorry engine. The design of the model K-51 crane provides for simultaneous operation of the mechanisms.

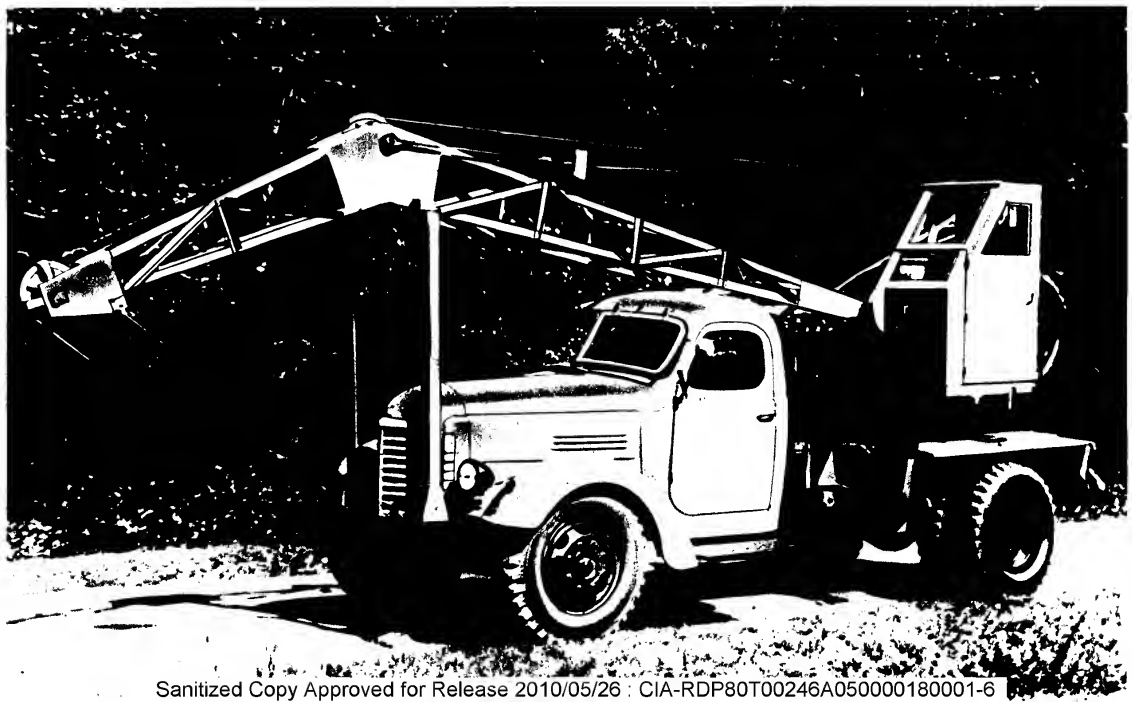
The **model K-52 Full-Circle Slewing Universal Crane** of unique design. This crane has a Diesel-generator which supplies power to the multi-motor drive for the crane mechanisms. A 30 kVA, 3-phase synchronous generator installed on the crane and driven by the lorry Diesel, which can be started from the operator's cockpit, supplies power to the individual crane motors. The motors can also be fed from a local power distribution system, if necessary. Each of the operating mechonisms is actuated by its own separate motor.

The maximum lifting capacity of this crane, equipped with a 7.5-m boom and supported by jacks, is 5 t at a radius of 3.8 m. If used with a 12-m boom and resting on jacks, the crane can handle up to 3 t within a radius of 4.5 m. The crane raises or lowers smoothly loads up to 5 t at hoisting speeds varying from 4 to 11 m per min.

Derricking over the full range of working reach requires 7 to 21 sec. The revolving plotform perfoms one full turn in 2 min.

A stabilizer mechanism locking the r.h. and l.h. truck suspension springs is installed on the non-revolving frame to ensure uniform setting of the rear axle springs during operation and to improve the stability of the crane in transverse direction.

Model ЛА3-690 Crane. Mounted on model ЗИЛ-150 lorry with 90 H.P., 2700 r.p.m. Engine



The rood speed of the obove crane is up to 30 km per hr.

The model K-52 crane may olso be used with a two-rope grab bucket of 0.5 cu.m capacity. The full laden weight of such a bucket is 1 750 kg.

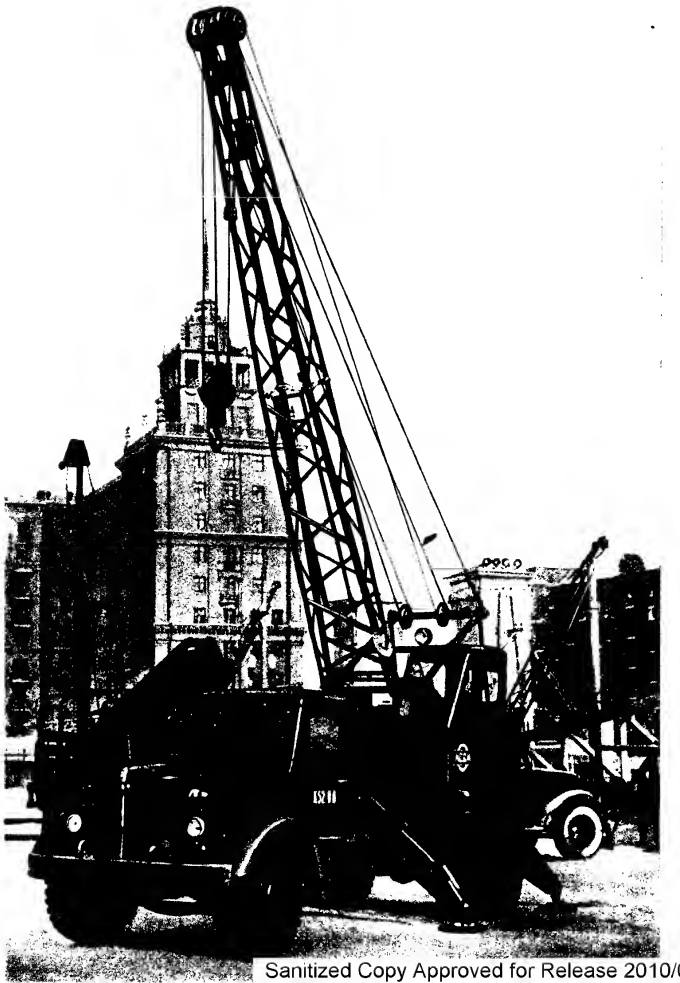
The crone group described here includes also the **model K-104 Crane** with a 10-t lifting capacity mounted on a type **ЯА3**-210 motor lorry chassis with a 125 H.P. Diesel engine.

The model K-104 crone design is similar to the model K-52 described above. It olso has a Diesel-generator drive system with individuol motors for the crane mechanisms. The design of this crane likewise provides for simultaneous operation of all mechanisms. The maximum lifting capacity of 10 t can be utilized if operoting with a 10-m boom within a radius of 4 m, the crone being supported by jacks. If used without jacks, it can handle loads up to 4 t. A 18-m boom can also be applied, the lifting copacity being correspondingly reduced to 6 t within 5-m reach, with jocks, or 1.5 t – without jocks. The hoisting speed vories from 5 to 15 m per min, depending on lood and radius. Derricking over the full working radius range takes about 70 sec. The platform revolves at a speed varying from 0.5 to 1.5 r.p m.

The crane is designed for moving over paved roads ot speeds up to 35 km per hr. With a load of 3 t suspended at a radius of 4 m on the

Model K-104 full-circle slewing crane. Mounted on model **ЯА3**-210 lorry with 125 H.P., 1500 r.p.m. engine. Power is supplied by generator installed on the crane. Power feed from local system can also be applied

Model K-52 crane. Mounted on model **МА3**-200 lorry



10-m boom lying parallel with the crane chassis, it can travel at a speed up to 5 km per hr.

SELF-PROPELLED CRANES ON PNEUMATIC TYRES

Soviet self-propelled cranes on rubber tyres have proved themselves highly recommendable for various kinds of loading and unloading jobs. Cranes of this class, particularly the K-102 and K-252 models, deserve speciol ottention.

The 10-ton model K-102 Crane is equipped with a 10-m boom which can be extended to 18 m by means of an additional intermediate section, if necessary. The above crane can be used either with a hook or with a 1.5 cu.m grob bucket, as desired. The extended boom can be equipped with a gooseneck jib and an auxiliary hook for handling large-size loads up to 2 t in weight.

The model K-102 crane can handle loads up to 10 t with a 10-m boom within a radius of 4 m. If an 18-m boom is applied, the maximum load capacity will be 7.5 t within a 4-m reach.

An 80-H.P., model КДМ-46, airless-injection Diesel engine drives all mechanisms of the crane, including the chassis group.

This crane ensures high hoisting speeds: its hook raising velocity is 19.5 m per min with a 10-m boom or 29.25 m per min with a 18-m boom. The grab bucket roising velocity is 58.5 m per min. The slewing speed is 3 r.p.m., and the self-propelled travelling speed – 7.3 km per hr.

Another crane – the **model K-252 Full-Circle Slewing Diesel-Electric Crane** on pneumatic tyred wheels, having a lifting capacity of 25 t, can

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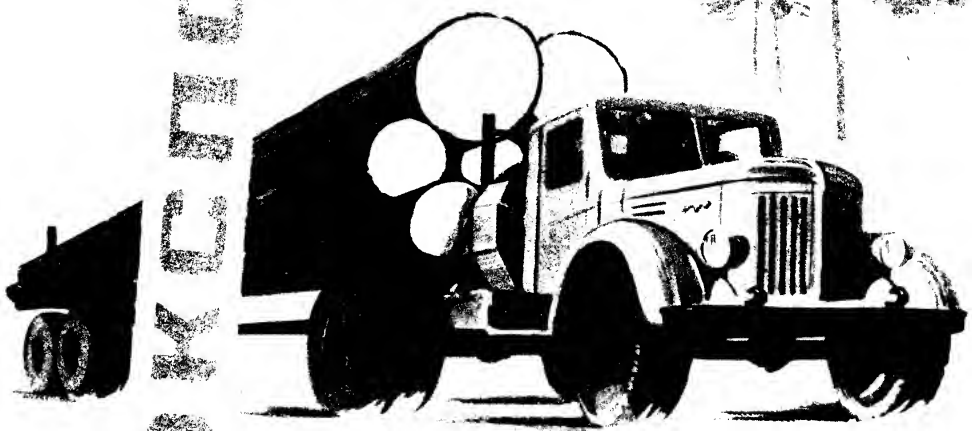

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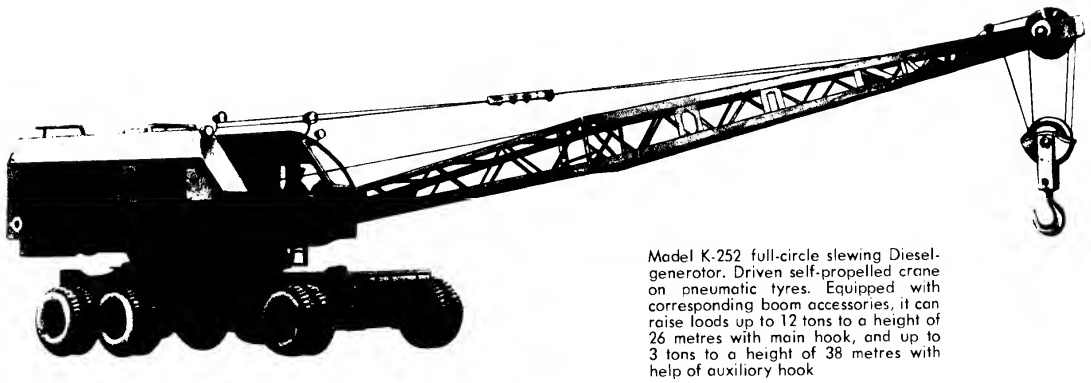
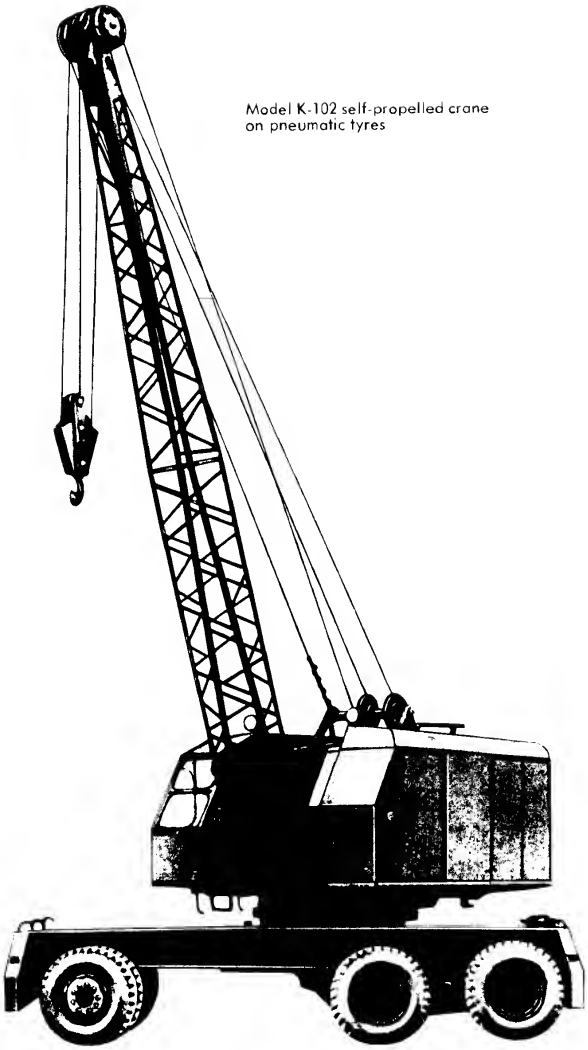
PLEASE ADDRESS YOUR ORDERS TO V O SOJUZPUSHNINA 47 DONSKAYA MOSCOW 49



Model K-252 full-circle slewing Diesel-generotor. Driven self-propelled crane on pneumatic tyres. Equipped with corresponding boom accessories, it can raise loods up to 12 tons to a height of 26 metres with main hook, and up to 3 tons to a height of 38 metres with help of auxiliory hook



Model K-102 self-propelled crane on pneumatic tyres

be recommended for extra heavy loading, unloading, and erection work on construction sites. This crane is built with a 15-m boom which can be extended to 25 m by meons of two 5-m additional intermediate sections.

The crane has jack supports rendering it the required stability when hondling heavy loads. A 5-m gooseneck jib, equipped with a small hook of 5 t capocity, can be additionally instolled on the 25-m boom in order to hoist extra large loads up to 5 t to high elevations or to make the erecting of roof structures for industrial or civil buildings more convenient.

The power unit of the model K-252 crane comprises a 150 H.P., model 2Д6, airless-injectian Diesel engine and three D C generators rated 85, 40 and 5.2 kW, respectively. All crane mechanisms are driven by separate motors. The crane can travel over level paved roods at a speed up to 14 km per hr. It can also move over firm soil, level or inclined up to 10 degrees, at a speed of 10.5 km per hr.

The lifting capacity of this crane is 25 t with jacks applied, boom 15 m long, within o radius of 5.25 m. With a 25-m boom and 7.5-m radius, the capacity is 12 t.

The crane can also handle loads up to 5 t within a rodius of 12 to 14 m, if a 25-m boom equipped with a gooseneck jib is used. The maximum capacity of this crane without jacks and with a 15-m boom is 11 t within 4.5 m, and with a 25-m baom it is 6.5 t within a radius of 6.5 m.

The hoisting velocities are: 11.6 m per min, with maximum permissible load, and 23 m per min, with unladen hook. The auxiliary hook moves at 23 m per min, if laden, and 60 m per min, if unladen. The revolving platform performs up to 2 r.p.m. The driver's cockpit is located well in front ond hos wide windows on all sides, to ensure better visibility of the working orea. The control and instrument panel, ond the controller handles and control levers are conveniently arranged in front and at the sides of the driver's seat.

Powerful floodligths are installed on the front of the cockpit to ensure adequate illumination of the working space.

Soviet mobile cranes, lorry-mounted as well os self-propelled on pneumatic tyres occupy on important place in the material handling equipment export of the U.S.S.R. They have alreody been exported to many foreign countries including China, Burma, Finland, Rumania, Poland, Egypt, Iran, Afghanistan, Lebanon, Czechoslovakia, ond others.

Detailed information and, if desired, concrete proposals ore promptly mailed by V.O "Machinoexport" upon request.

MACHINE-TOOLS

Machine-taol manufacturing works occupy one af the leading positions in the Soviet machine-building industry. Lorge works, such os the Krosny Proletary, the Ordzhonikidze Warks, the Automatic Machine-Tool Works of Kiev, and a number of others, praduce huge quantities of various metal working machine-taols of universal as well as special-purpose types. The designing affices ond scientific reseorch institutes in the U.S.S.R. are continuously busy in creating new efficient machine-toals af most perfect design. Much work is being dane on improving the existing models.

Due to their unique design ond high engineering ond economicol feotures, Soviet-made machine-taols have already received deserved appreciation of experts in various countries.

This paper presents o description of only o smoll group of general-purpose mochine-tools, widely used in various branches of the metol-working industry.

LATHES

Our mochine-tool monufacturing works produce engine lathes of heavy, medium and light types. The maximum diameter of work-pieces turned over the bed varies from 320 to 4 000 mm.

Brief specifications of some lothe models are given below.

	Model							
	1 A 616	1 K 62	163	1 A 64	165	1660 г	1670	1680
Maximum work size over bed, mm	320	400	630	800	1 000	1 250	1 600	2000
Distonce between centres, mm	710	710 1 000 1 400	1 400 2800	2800	2 800 5 000	8000	8000	10 000
Spindle speed ronge, r.p.m.	33 to 2367	12.5 to 2 000	10 to 1 250	7.5 to 750	5 to 500	3.15 to 200	2.5 to 160	2 to 128
Weight of lohte, t (metric)	1.45	2.1 2.3 2.4	4	11.8	12.5 16.0	55.4	126	137

The models listed above do not include the full variety of lathe types and sizes available to the Buyer.

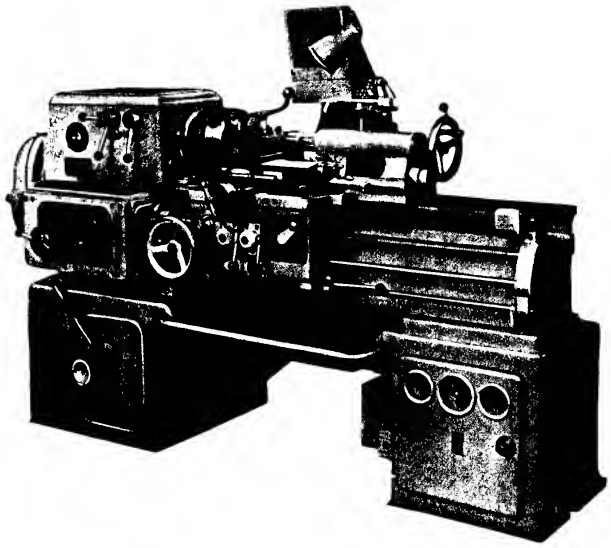
So, for instance, model 1602 precision lathes with a centre height of 65 mm and a spindle speed ronge up to 2 500 r.p.m. con be offered to Users interested in lathes for precision work.

A speciol model Л-220 laborotory lathe with o centre height of 350 mm ond o distonce between centres of 1 500 mm can be successfully applied for miscelloneous research work such as investigating the dynamics of the cutting process, or determining the endurance of tungsten carbides and other cutting tools.

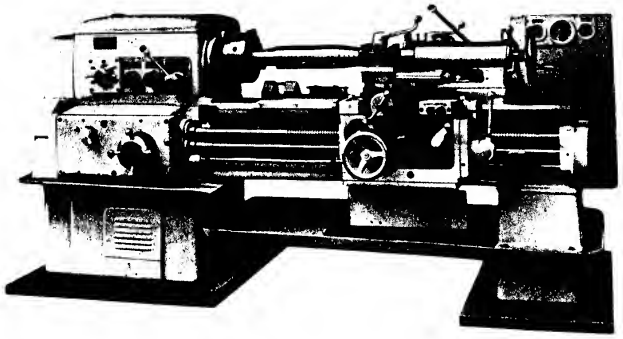
A most convenient ond efficient machine is the model 1A95 combination lathe for turning, milling, drilling, grinding, slotting, and tool-sharpening jobs. It can be used both in stationary and mobile repair shops, on ships, etc.

AUTOMATIC AND SEMI-AUTOMATIC LATHES

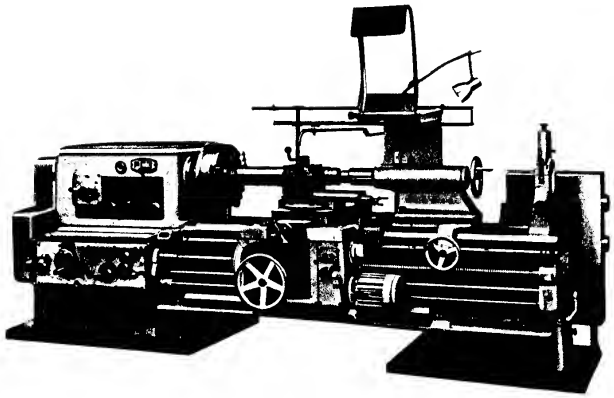
Brief specificotions of some outomotic lathe models are given below.



Engine lothe, model 1 A 616



Screw-cutting lathe, model 1 K 62



Screw-cutting lothe, model 163

	Model designation					
	1 A 124[1]	1 A 136[2]	1240-4	1265-4	1290	1240-6
Number of spindles	1	1	4	4	4	6
Maximum bor or tubular wark size, mm	25	36	40	80	100	40
Maximum cutting lenght, mm	80	80	190[3]	200	200	190[3]
Spindle speed range, r.p.m.	110 to 2800	100 to 2000	156 to 2126	58 to 1025	54 to 759	156 to 2126
Weight of machine, t (metric)	2	2	8.7	13	16	9

[1]) Thread-cutting automatic lathes
[2]) Maximum length of bar feed

Single- ond multi-spindle semi-automotic lathes of various types and sizes are olso delivered for export. Among these is the model 1A283 six-spindle vertical semi-automatic lathe for o moximum work size of 300 mm, and the model 1284Б eight-spindle vertical semi-outomotic lathe capoble of handling workpieces up to 400 mm in diometer. The full list of mochine tools offered for export includes a consideroble number of other semi-automatic universal and special-purpose lothes.

VERTICAL BORING AND TURNING MILLS

An important place in the U.S.S.R. export of machine-tools is held by open-side ond double-upright vertical boring mills designed for handling workpieces of vorious size.

Brief specificotions of some vertical boring mill models are given below.

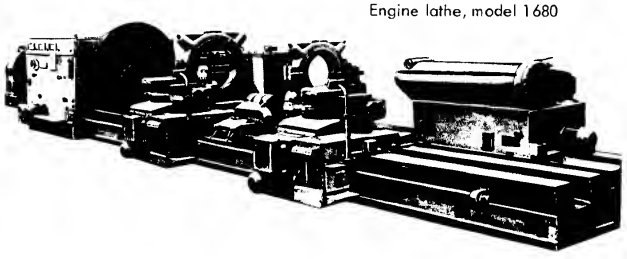
	Model designation					
	Open-side			Double-upright		
	1531	1541	1553	1532	1565	1591
Table diameter, mm	1030	1400	2100	3080	4500	8750
Actual swing, mm	1250	1600	2300	3200	5000	12500
Maximum height of warkpiece, mm	1000	1250	1400	2000	3000	5000
Weight of workpiece, t	2	5	6	20	45	220
Number of table speeds	16	16	16	18	Infinite	
Table speed range, r.p.m.	6.3 to 315	4 to 200	2.2 to 71	0.6 to 31	0.4 to 20.7	0.13 to 8.45
Weight of machine, t	12	18	35	70	140	550

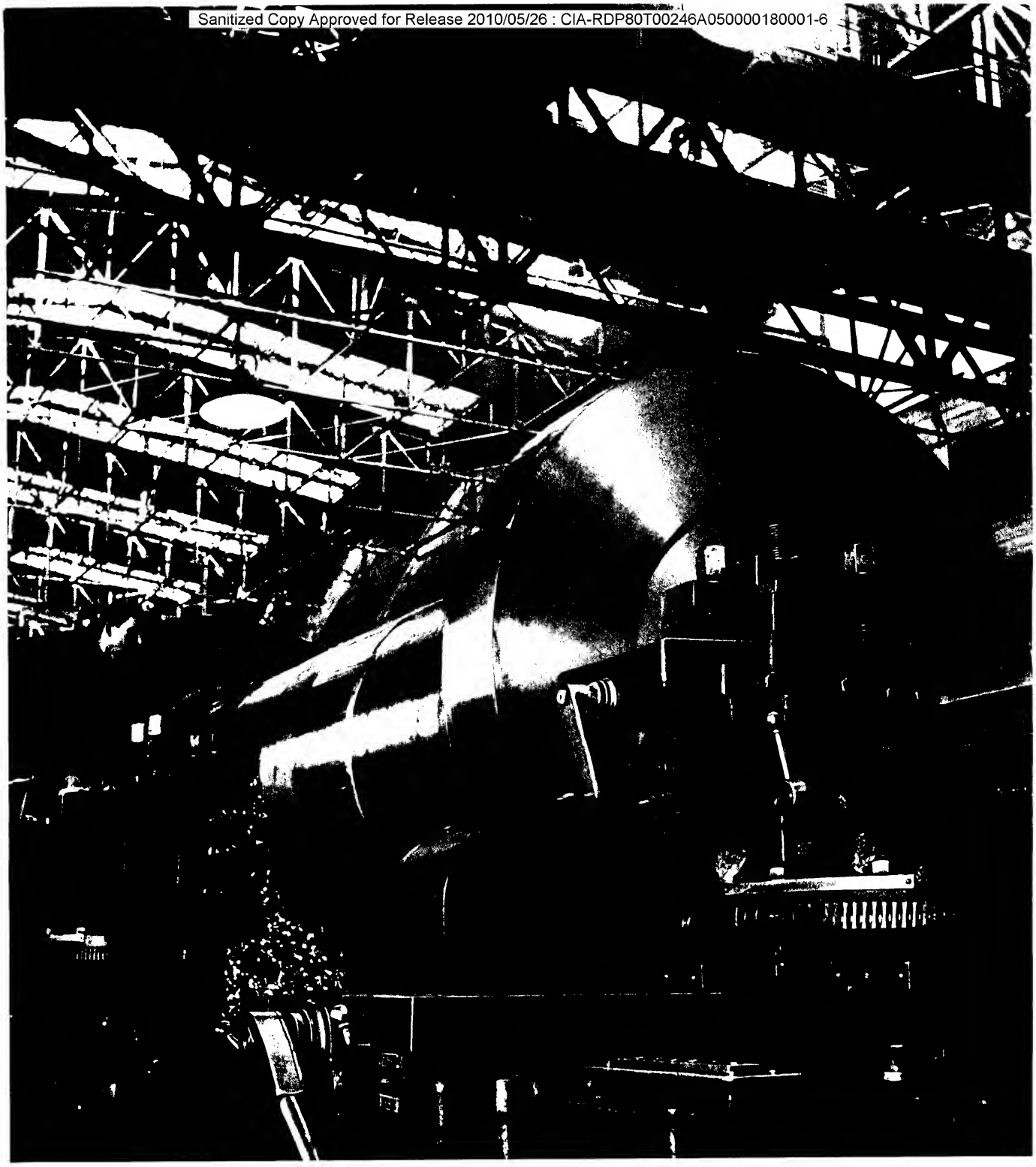
HORIZONTAL BORING MILLS

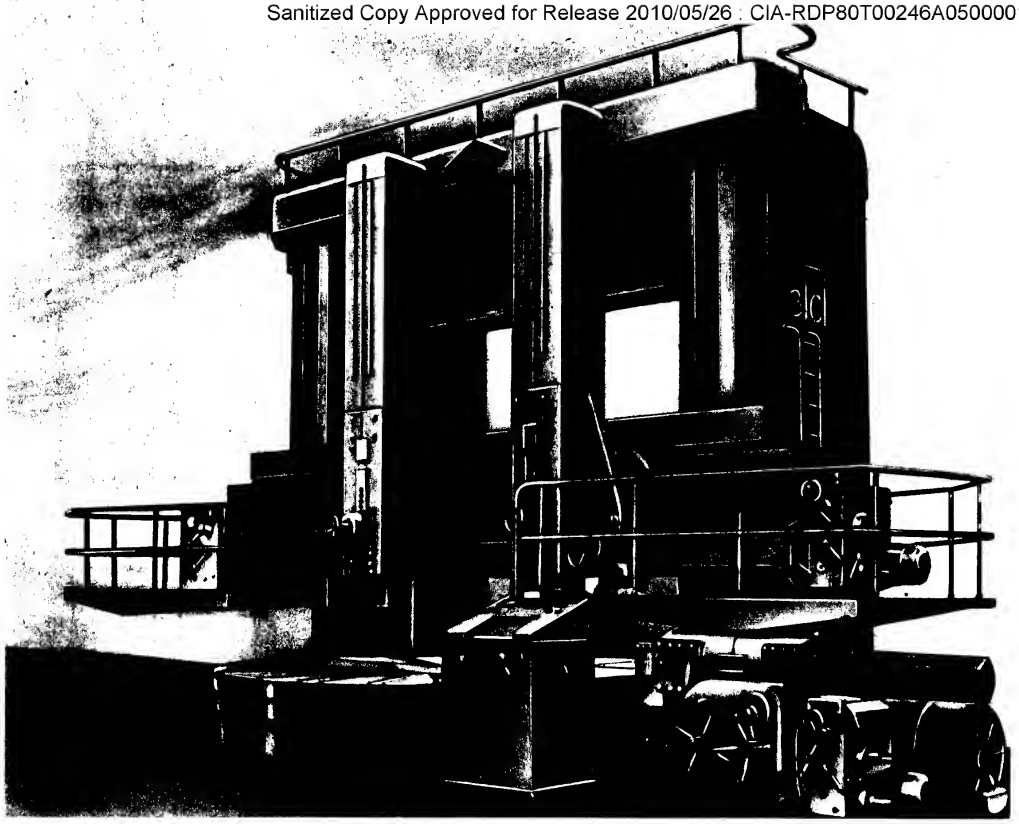
Universal ond ploten type horizontal boring mills for machining large ond heavy pieces, olso precision boring mills with co-ordinate-control, constitute but o part of the export list covering machine-tools of the boring mill class. Specifications of some general-purpose horizontol boring mill models are given below.

	Model designation			
	2 A 613	2620	2656	2680
Spindle diameter, mm	62	90	175	320
Table dimensions, mm	710×900	900×1120	Bedplate	Bedplate
Number of spindle speeds	12	22	22	Infinite
Spindle speed range, r.p.m.	51 to 1285	12.5 to 1600	7.5 to 950	2 to 250
Column travel, mm	—	—	3200	6000
Weight of machine, t	5.9	12	41.5	161.8

Engine lathe, model 1680

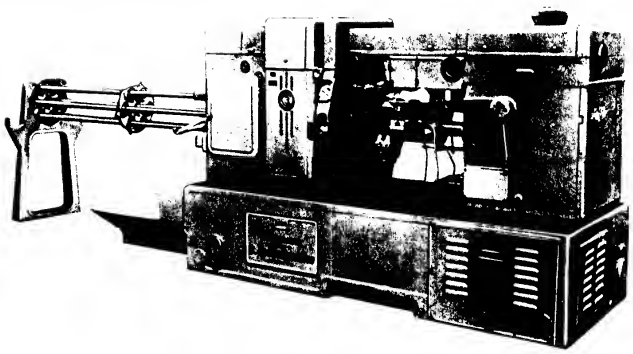




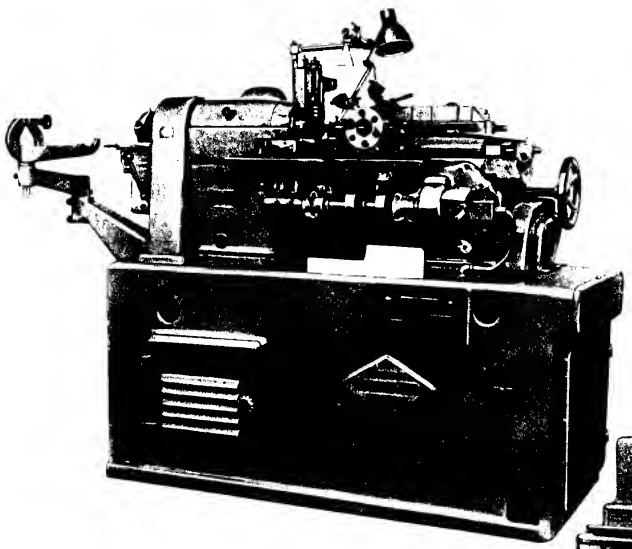


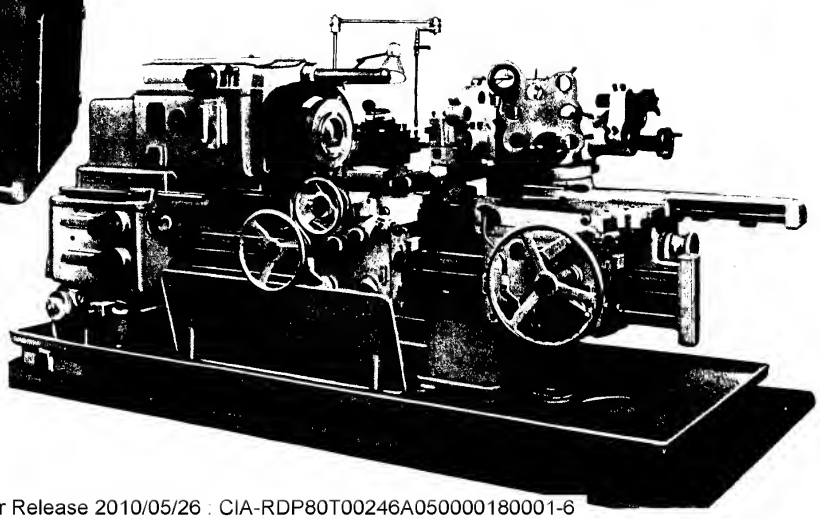
◄
Dauble-column vertical turning and boring mill, model 1565, with a diameter of wark table — 4500 mm. Table speed is infinitely adjustable. The design of the machine allaws warkpieces up ta 45 tans to be installed

Six-spindle automatic lathe, model 1240-6
▼



Automatic screw-cutting lathe, model 1 A 136
▼





▲
Turret lathe, madel 1 П 365. Maximum speed of work spindle — up to 1500 r.p.m. Maximum diameter of workpiece — 500 mm. Power of main drive electric motor — 20 kW. Spindle speeds and feeds are changed by preselector mechanisms, allawing different speeds and feeds to be selected and changed over without stopping the lathe

DRILLING MACHINES

This class of machine-tools covers a wide nomenclature of models. Drill presses for hole sizes ranging from 1.5 to 100 mm are being built for export.

Given below are data of some drill press models.

	Model designation			
	2 A 125	2 A 135	2 A 150	2170
Maximum drill size, mm	25	35	50	75
reach of spindle, mm	250	300	350	400
Table dimensions, mm	500×375	500×450	600×500	750×600
Number of gears	9	9	12	12
Speed range, r. p. m.	96 to 1360	(I) 63 to 1004 (II) 119 to 1905	32 to 1400	22 to 1018
Weight of machine, t	1.02	1.7	2 2	3.5

The above drilling machines are equipped with mechanisms permitting not only drilling, countersinking and reaming, but also cutting female threads with the help of taps.

Both universal and special-purpose type radial drills are built.

The basic models of universal radial drills are:

	Model designation				
	2 A 53	2 A 55	2 Б 55	257	258
Maximum drill size, mm	35	50	50	75	100
Maximum reach, mm	1 200	1 500	2000	2000	3000
Number of spindle speeds	12	19	19	22	21
Speed range, r.p.m.	50 to 2240	30 to 1700	30 to 1700	11.2 to 1400	9 to 1000
Weight of machine, t	3.1	4.1	10.2	10.6	20

GRINDING MACHINES

The following types of grinding machines con be offered to our Customers: standard universal as well as plain cylindrical grinders for work sizes up to 1 500 mm; centreless grinding machines for work sizes from 3 to 150 mm; various internal, surface; thread-, copy-grinders, tool-shorpening machines, etc.

Brief specifications of some cylindrical grinder models are given below.

	Model designation					
	3150	3153 M	3164	3172	3174	XIII—94
Maximum workpiece diameter, mm	100	130	400	560	800	1 500
Distance between centres, mm	300	500	2000	4000	5000	7 500
Weight of machine, t	1.1	2.1	10	30	40	80

PLANERS AND SLOTTERS

Foreign Buyers con be offered a variety of planing and slatting machines, including open-side planers with a table width of 900 or 1 250 mm and double-upright types with tables 900, 1 250, 1 800, 2 500, or 3 600 mm wide. These machines are built with various table lengths to suit the Customer's requirements.

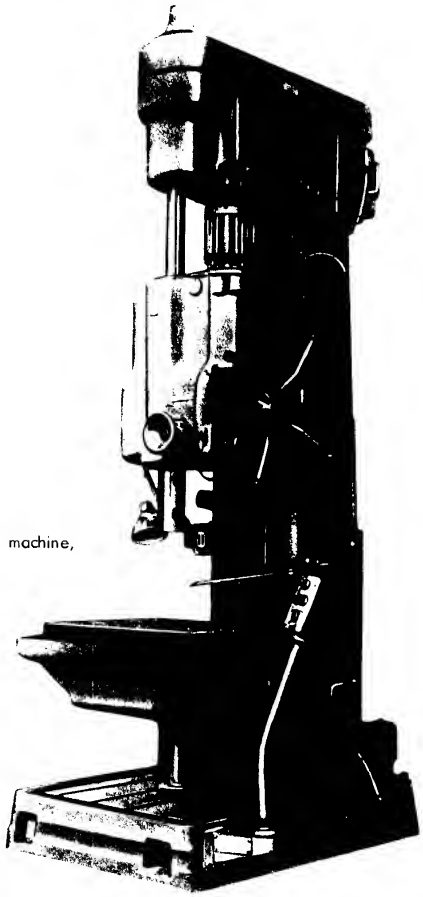
Most widely applied slotter models are: model 7417 with a ram stroke of 160 mm, model 7430 with 380 mm stroke length, and a hydraulic slotter, model 7450, having a ram stroke of 580 mm. All of the above machines are equipped with round tables and indexing mechonisms.

Soviet machine-tool manufacturing works also produce for export various gear-cutting machines, including miscellaneous gear-milling machines capable of cutting gears up to 3 200 mm or more in diameter, also gear-shapers and other semi-automatic gear-cutting machines.

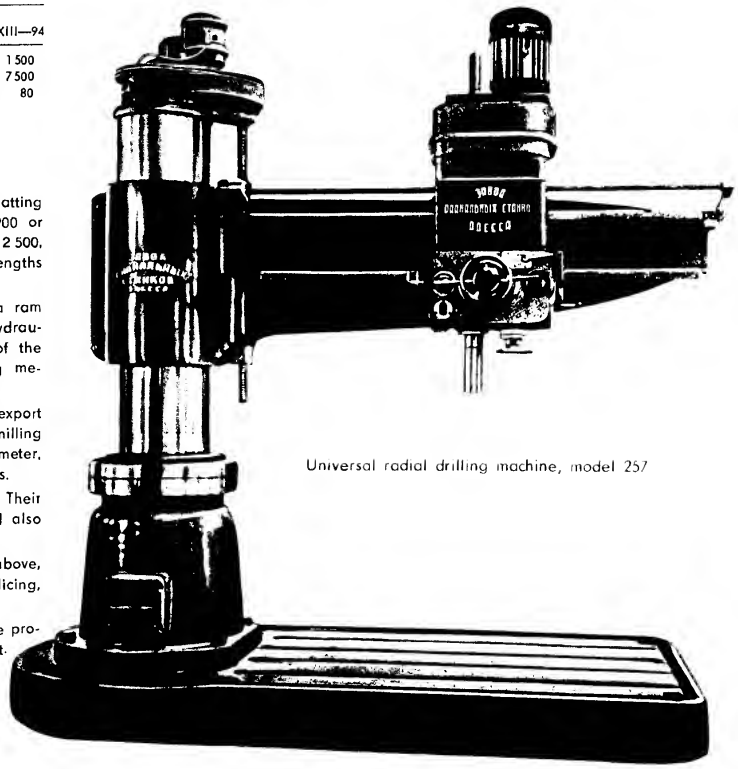
Various types of milling machines are also built for export. Their lists include usual knee-type and longitudinal miller models and also a number of special-purpose milling machines.

In addition to all machine-tool models and types mentioned above, the U.S.S.R. industry furnishes olso a wide range of broaching, slicing, threading, balancing, and other metal-working mochines.

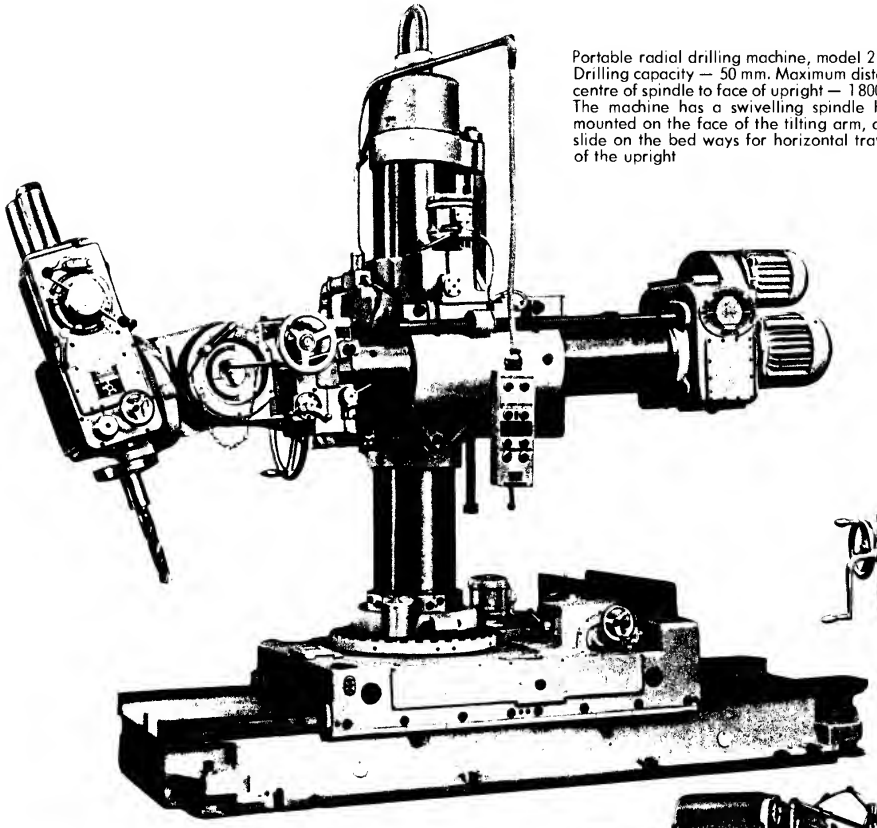
Detoiled information, catalogues, and – if necessary – concrete proposals are promptly mailed by V/O "Stankoimport" upon request.



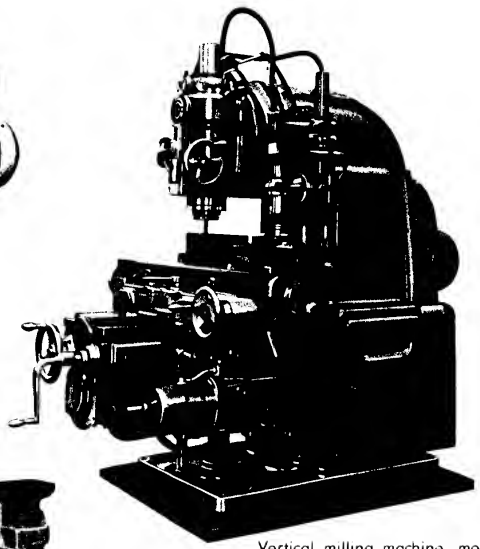
Vertical drilling machine, model 2170



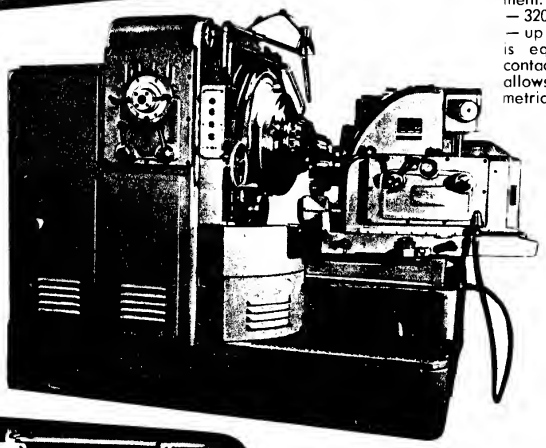
Universal radial drilling machine, model 257



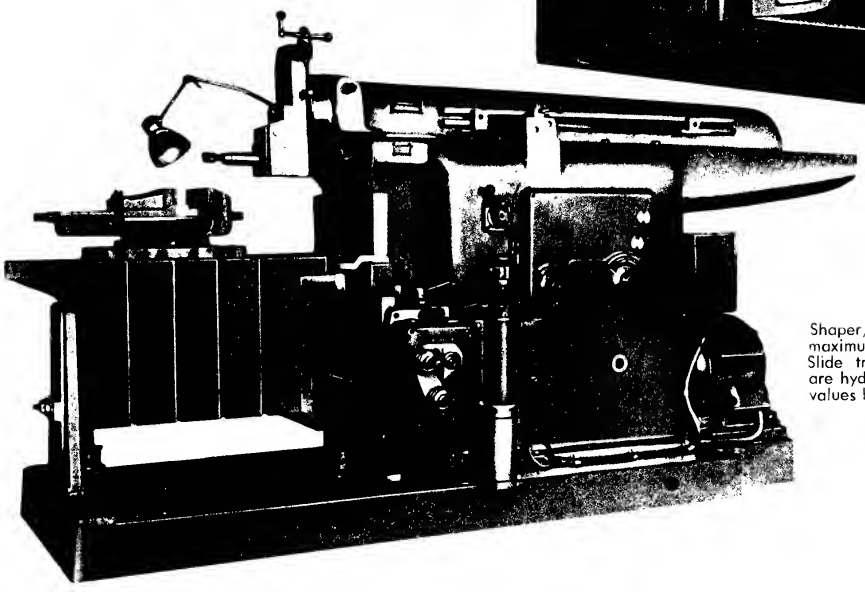
Portable radial drilling machine, model 2 П 56. Drilling capacity — 50 mm. Maximum distance, centre of spindle to face of upright — 1 800 mm. The machine has a swivelling spindle head, mounted on the face of the tilting arm, and a slide on the bed ways for horizontal traverse of the upright



Vertical milling machine, model 6 H 12 K, with a copying attachment. Working surface of table — 320×1 250 mm, spindle speed — up to 2 000 r.p.m. The machine is equipped with an electric contact copying system which allows both contour and volumetric copying to be performed

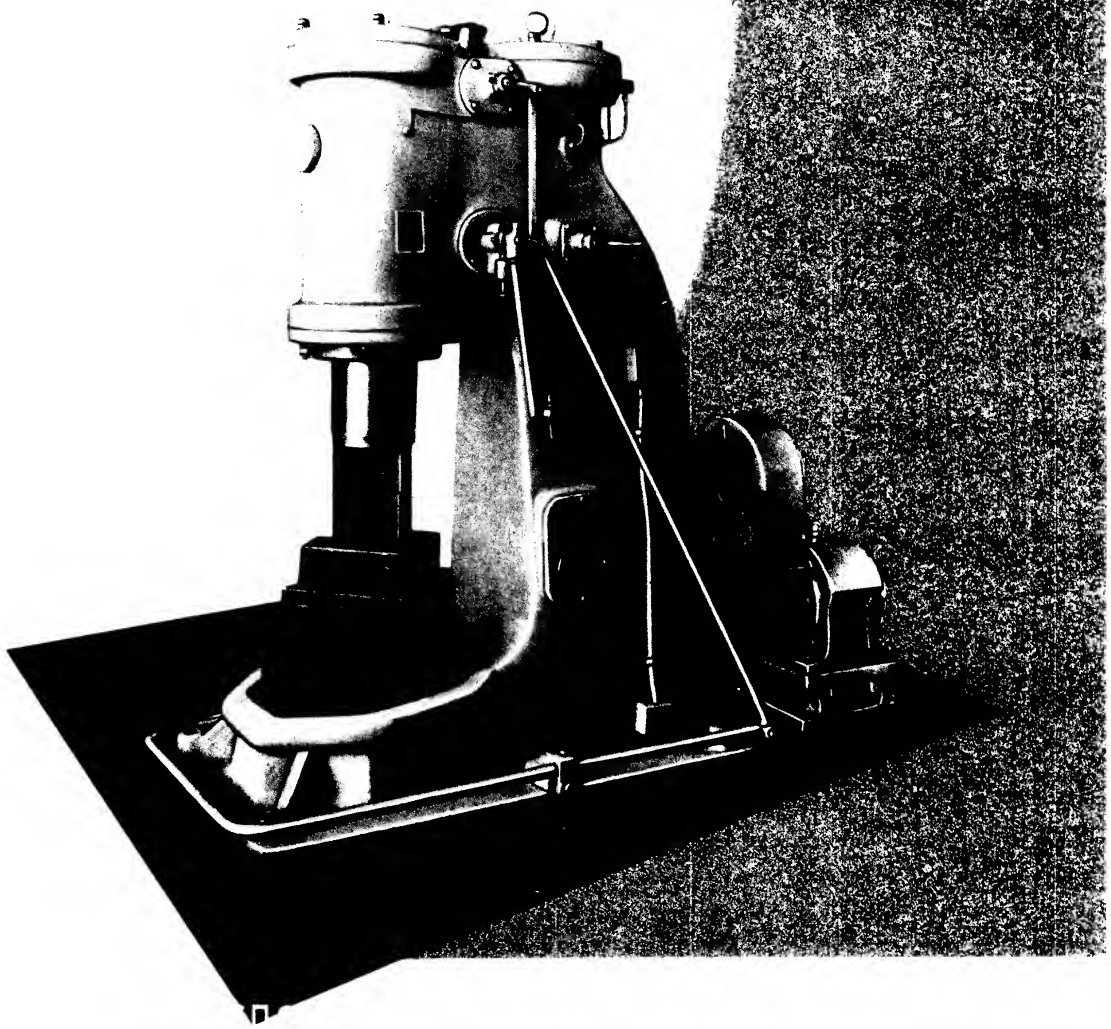


Semi-automatic gear-cutting machine, model 528, designed for cutting helical-tooth bevel and hypoid gears

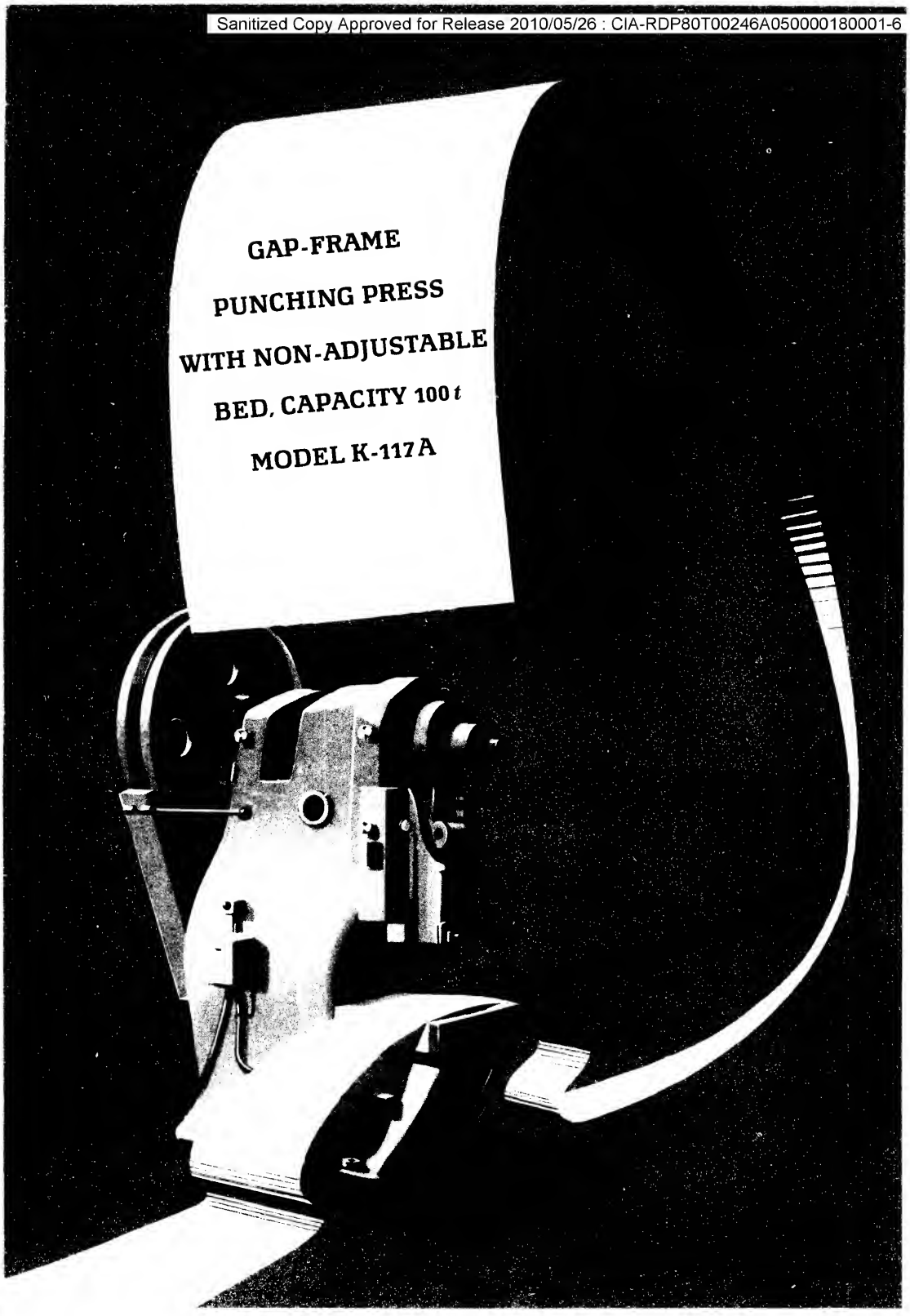


Shaper, model 737, with a maximum length of cut — 900 mm. Slide traverse and table feed are hydraulically operated, their values being varied infinitely

PNEUMATIC
MOTOR-DRIVEN FORGING HAMMER,
with falling weight 150 kg. Model M5-412



СТАНКОИМПОРТ



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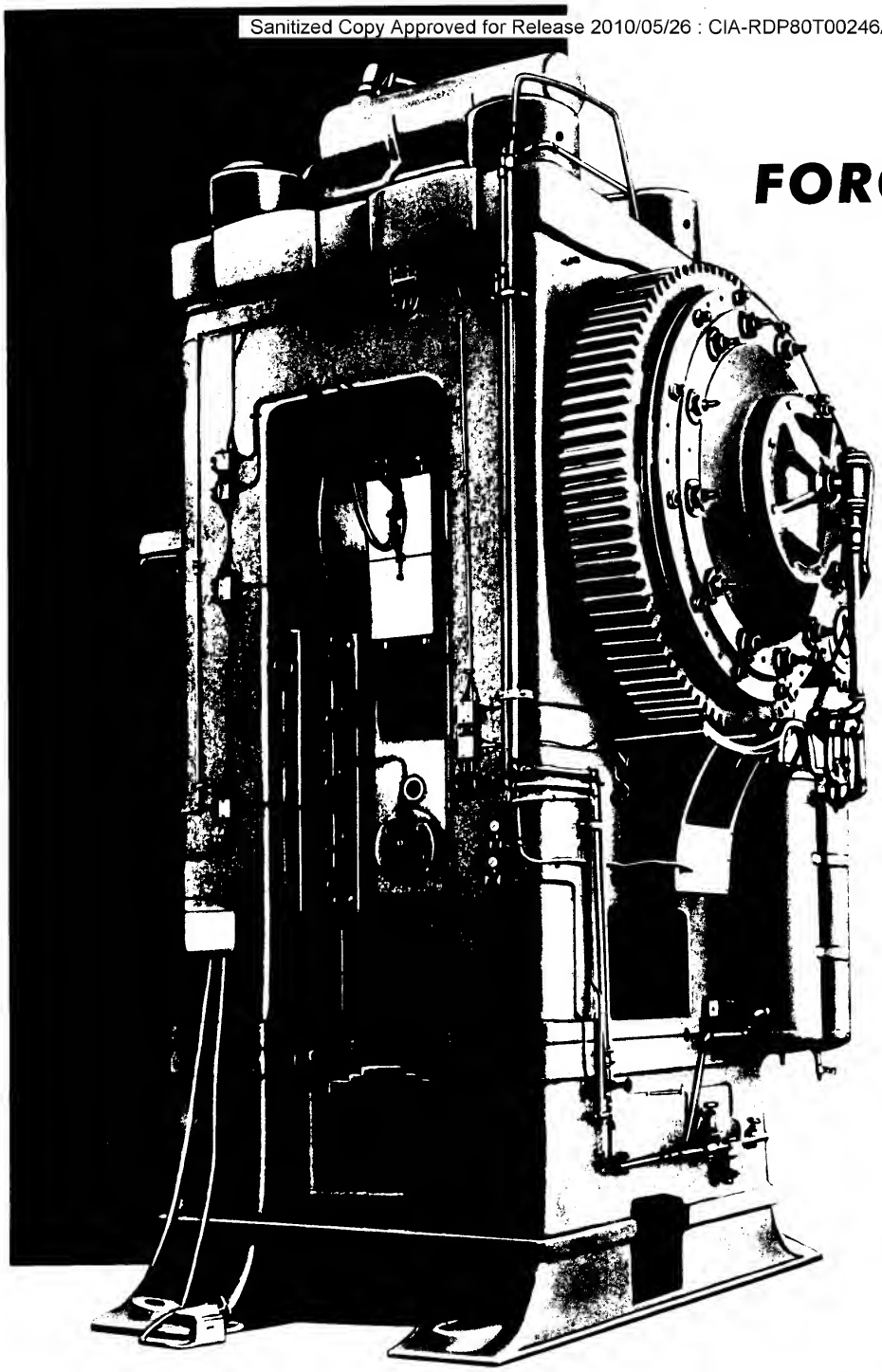
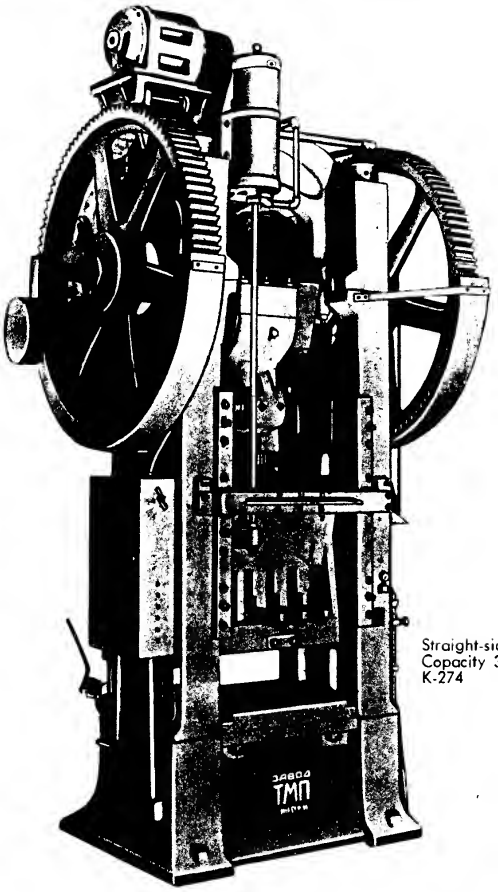
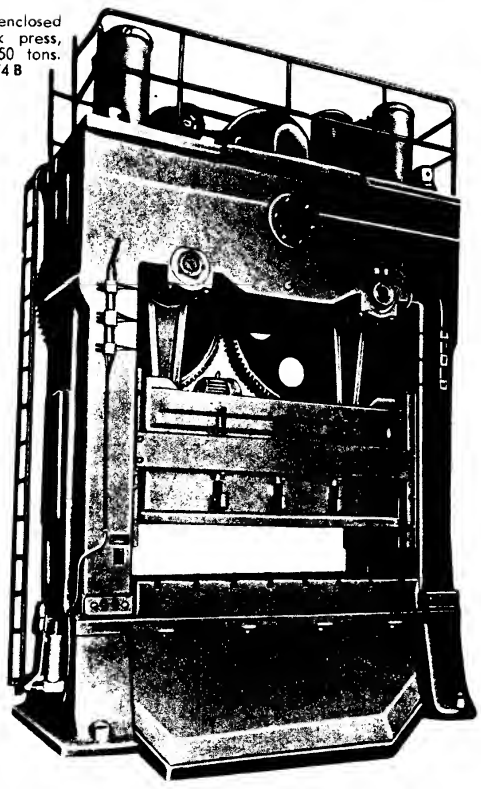


FORGING AND PRESSING EQUIPMENT

Forging and stamping crank press, capacity 1600 tons. Model K-864



Straight-side crank press. Capacity 315 tons. Model K-274



Two-point enclosed type crank press, capacity 250 tons. Model K-374 B

A number of first-class factories in the Soviet Union manufacture various types of forging and press machinery (presses, automatic headers, hammers, shears, etc.).

Some of the types of forging and press machinery, that are exported from the U.S.S.R. to various countries or are manufactured for home use, are given below.

Forging and Stamping Crank Presses with capacities of 630, 1 000, 1 600, 2 500, 4 000 and 6 300 t are available for performing a variety of hot forging, stamping or sizing operations carried out in either single-cavity or multi-cavity dies. These processes are widely used in forging shops for mass or large lot production.

The design of the presses provides for ample strength and complete absence of bed deflection at maximum loads. The provision of a safety friction device, which is tripped when the torque on the main shaft exceeds the maximum permissible value, protects the presses against breakages.

The 6 300-t forging and stamping crank press is a unique structure with an overall height of 10.5 m. It is powered by a 400 kW drive.

Presses with capacities of 630, 1 000 and 1 600 t are available with welded-steel frames.

Friction-Driven Screw Presses with capacities of 63, 160, 250 and 400 t are available for a large variety of stamping operations including: drawing parts of sheet metal, heading of bolts, spikes and rivets, and also bending and straightening of sheet metal components. The comparatively high power of these presses and their hammer-like blow allow them to be used for drop forging in closed dies.

Presses with capacities of 160, 250 and 400 t are controlled by means of an auxiliary hydraulic device, a so-called servo-control. This device ensures a constant pressure between the friction disc and the flywheel, thus facilitating press operation.

Single-Acting Single-Crank Presses are available:
with non-adjustable beds with capacities of 13, 25, 50, 63, 100, 160 and 400 t,
with adjustable beds with capacities of 40, 63, 100 and 160 t,
and with frames inclinable to 15° and 30° with capacities of 6.3, 10, 16, 63 and 100 t.

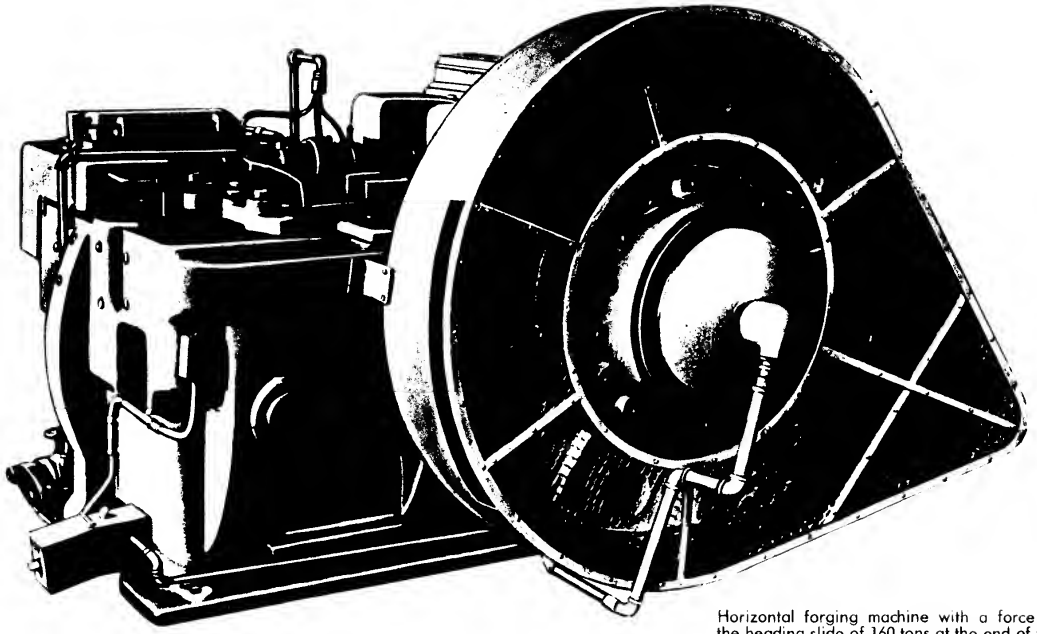
Single-acting single-crank punching presses with non-adjustable beds are used for punching, blanking, shallow drawing, bending of strip or sheet metal, beading, flanging, seaming, and other operations. In cases when the die height varies largely, it is more expedient to use presses with adjustable beds. The latter are widely used in the automobile and tractor industries, in the manufacture of refrigerators, components of electrical devices, agricultural machinery, electrical household appliances and hardware.

A streamlined frame of high-quality cast iron is common to all these types of presses. The working stroke is engaged either by electric push-buttons or by depressing a pedal. The slide stroke is adjusted by means of an eccentric bushing connected to the crankshaft through a claw coupling.

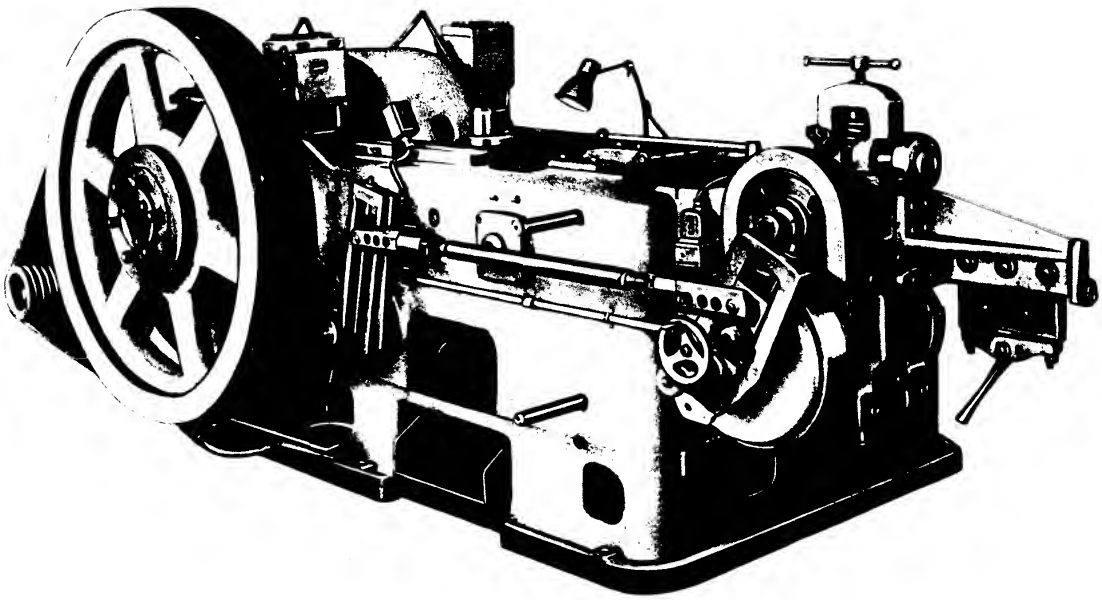
Inclinable bed presses can be furnished with either dial or roll feeds.

The 400-t press has a welded-type frame. It is equipped with an air-operated multi-disc clutch.

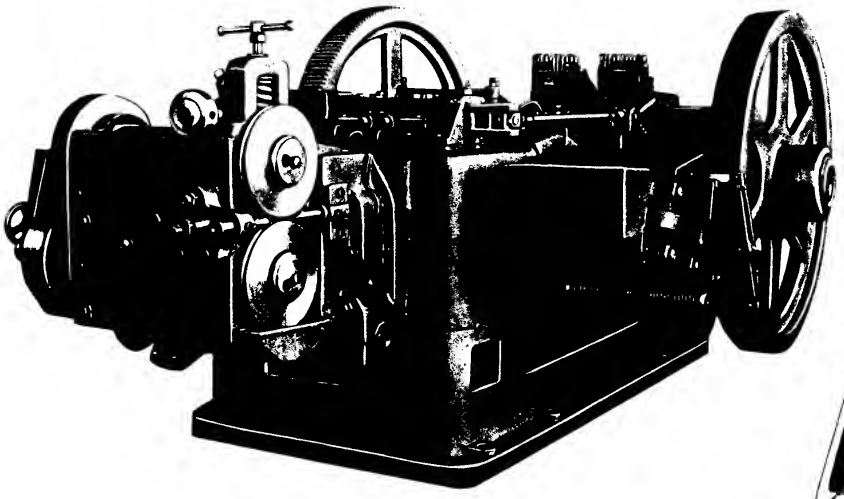
Many types of straight-side crank presses may be manufactured for export shipments. They include: single-acting single-crank straight-side presses with capacities of 100, 160, 250, 315 and 400 t for blanking,



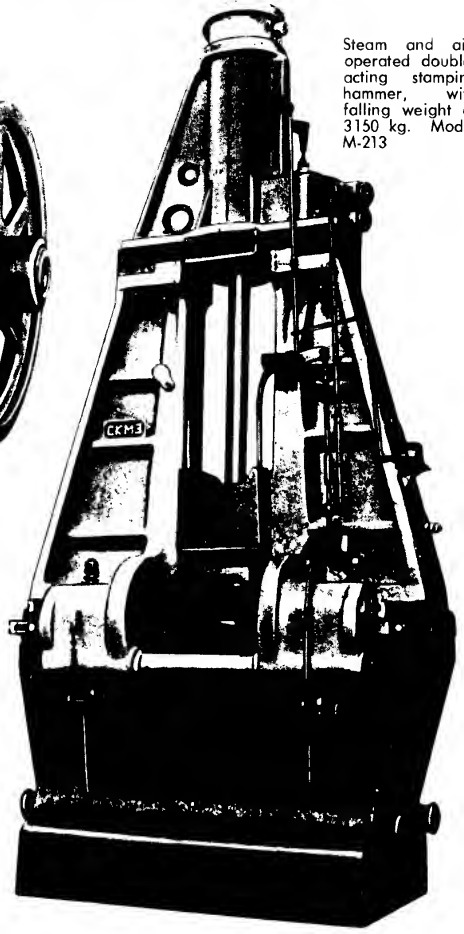
Horizontal forging machine with a force of the heading slide of 160 tons at the end of the stroke. Maximum bar stock accommodated, 40 mm. Model B-111



Automatic double-stroke bolt header, for bolts up to 16 mm. Model A -164



Automatic cold nut forming machine. Model M-412



Steam and air-operated double-acting stamping hammer, with falling weight of 3150 kg. Model M-213

shallow drowing, bending, and other stamping operations; double-crank presses with capacities of 160, 250, 315, 400, 500 and 800 t designed for cold stomping operations – the production of lorge work-pieces of sheet metal; double-acting presses with capacities of 40, 63, 100, 250 and 315 t widely used for drawing operations in strip or sheet metal, and coining presses with capacities of 100, 160, 400, 630, 800, 1 090 ond 2 000 t used for cold sizing, coining, embossing, straightening, etc. A high accuracy, up to 0.05 mm on the height of the work-piece, can be attained in sizing and coining work. Presses with auxiliary outer slide, with capocities of 315, 400 and 630 t, ore used for hot or cold trimming of floshes on forgings produced on hommers as well as for blanking, punching, and other operations.

Besides these standard models power presses with increased throat depth for punching holes in metal, crank presses for extrusion, cam and crank presses for briquetting powders ond ceromic products, edging presses, etc. can be monufactured.

All presses are equipped with multi-disc, friction clutches having electromagnetic controls.

The presses are operated from two push-buttons. Due to this safety meosure, both hands of the operotor are on the push-buttons when the stroke occurs. All presses have provision for single blows, continuous operation and inching operation. The height of the die space in oll presses is adjusted from a separote electric motor.

Hydraulic Presses are available either with an individual drive or operating from o pumping and accumulotor unit.

Presses with individual drive, having capacities of 63, 100, 160, 315 and 630 t, are designed for molding parts from plostics. They are also used for stamping small parts and in the production of obrosive articles. Presses with capacities of 10, 16, 25, 40, 63, 100 and 160 t are expediently used for straightening shafts and other workpieces after forging, stomping or heat treatment.

Attochment hydraulic presses for erecting operations, hydraulic scrap boling presses, presses for forming relief in dies by pressure are available for export.

Besides the standard models a lorge variety of special-purpose hydroulic presses are available for export on special order. Exomples include presses for stamping rubber with a capacity of 8 000 t and presses for producing bars and tubing of non-ferrous metals by extrusion, having a capacity of 2 000 t, etc.

Not long ogo o unique double-acting press was built for one of our foreign Buyers. It wos designed for hot and cold stamping of boiler bottoms with o moximum diameter of 4 820 mm for a metol thickness of up to 34 mm ond blank diameter up to 5 500 mm. The total force exerted by the press equals 4 000 tons, its height is 13.4 m above floor level, ond its weight is 1 320 tons.

This press was furnished together with a pumping-accumulator unit having an effective capacity of 600 litres per min and a working pressure of 200 otm. The unit was equipped with pistonless holders, mercury fluid level indicators for the holders, up-to-dote control devices, ond high-pressure piston pumps.

Horizontal Forging Machines for bar stock diometers of 40, 50, 80, 100, 150, 190 and 225 mm develop a force of the heading slide at the end of its stroke of 160, 250, 500, 800, 1 200, 2 000 and 3 000 t, respectively.

Forgings, headed on these machines, have a very small forging draft (from 1° to 3°). This provides for an economy of metal and also of time for the subsequent mochining.

The multi-disc friction clutches used on these machines are air-operated, and this ensures rapid and smooth engagement. Provision is made for adjustment of the clearances between the discs necessitated by wear. A special device on the driving shaft, interconnected with the brake pulley, protects the machine against overloads. This device is tripped when the torque on the small gear exceeds the maximum permissible value.

The machines may be operated for single blows, continuous operation or inching operation.

Horizontal forging machines with capacities of 800, 1 200, 2 000 and 3 000 t are equipped with hydraulic lifting table for carrying over the blank from die to die.

In the 3 000-t machine, a special auxiliary drive is provided for cranking over the machine during setting up or repairs.

Automatic Cold Heading Machines for producing bolts and rivets are available for export shipment either as separate units or in sets. A set includes: an automatic bolt header, an automatic bolt head trimmer and a screw thread roller machine with flat dies.

Automatic cold heading machines are manufactured in the following models: single, double and triple stroke types with either open or solid dies for bolt shanks from 3 to 25 mm in diameter.

All operations carried out on the automatic cold headers (bar or wire feed, cut-off and carry-over of blank, heading of bolt or rivet and ejection of the finished work) are completely automated.

Prospective Buyers are offered automatic nut forming machines, designed for heading bright nuts from bar stock without the necessity for subsequent operations (except thread topping).

Besides the above, the Soviet industry manufactures automatic nail making, bending and chain making machines.

Pneumatic Motor-Driven Forging Hammers with falling weight of 50, 75, 150, 400 and 750 kg are designed for the performance of various forging operations between open flat and formed dies, including drawing, piercing holes, hot cutting, forge welding, twisting and forging in open hand dies. The use of pneumatic motor-driven forging hammers does not require a large investment as steam boilers, compressor units, steam and air pipe-lines are not needed for their operation. These hammers are driven from an individual electric motor. The hammers are furnished with anvils that weigh 12 times as much as the falling weight.

Arc-Type Steam and Air-Operated Double-Acting Forging Hammers with falling weights of 1 000, 2 000, 3 000 and 5 000 kg are designed for various forging operations performed between open flat dies. The hammers operate on compressed air or steam at a pressure of 6 to 8 atm. The following cycles are provided for: single blows of varying force, ram hold-up and hold-down. The hammers are provided with anvils that weigh 12 times as much as the falling weight.

Steam- and Air-Operated Double-Acting Stamping Hammers with falling weights of 630, 1 000, 2 000, 3 150, 5 000 and 10 000 kg are used for hot forging of metal in closed multi-cavity dies in forge shops of large lot or mass production enterprises. These hammers operate on compressed air or steam at a pressure of 7 to 8 atm. Provisions are made for the following cycles: single blows of variable force, automatic operation and oscillating cycle. Anvils furnished with these hammers are 20 times as heavy as the falling parts.

Squaring Shears with sheet capacities of 1.6, 2.5, 6.3, 12.5, 16 and 20 mm and cutting length of 2 000 mm are designed for straight longitudinal cuts with either single or continuous strokes. All shears are driven from separate electric motors.

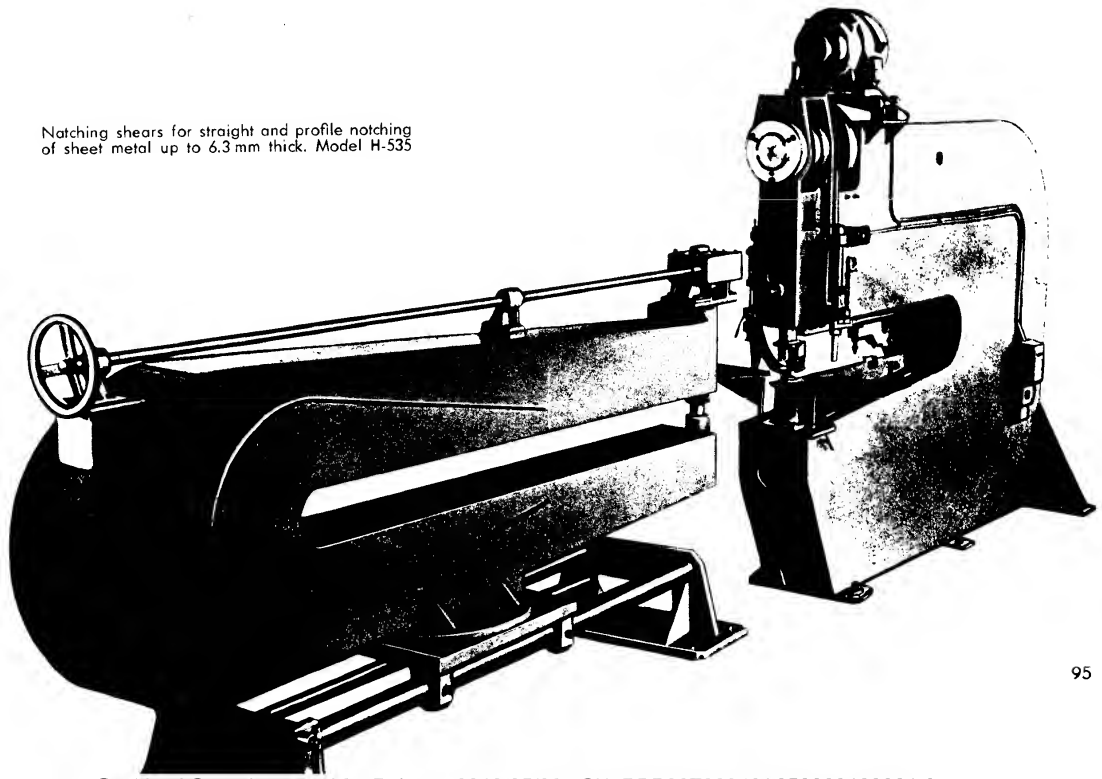
Gang Slitting Shears are available for cutting bands of metal with an ultimate strength of 150 kg per sq.mm and thickness of 0.03 mm to 1.5 mm, and also for longitudinal cutting of cold-rolled band of steel, bronze, brass or aluminium. These shears can be equipped with unreelers for wide and narrow bands, pneumatic cutting-off knife, an edge trimming device, and a reeling drum.

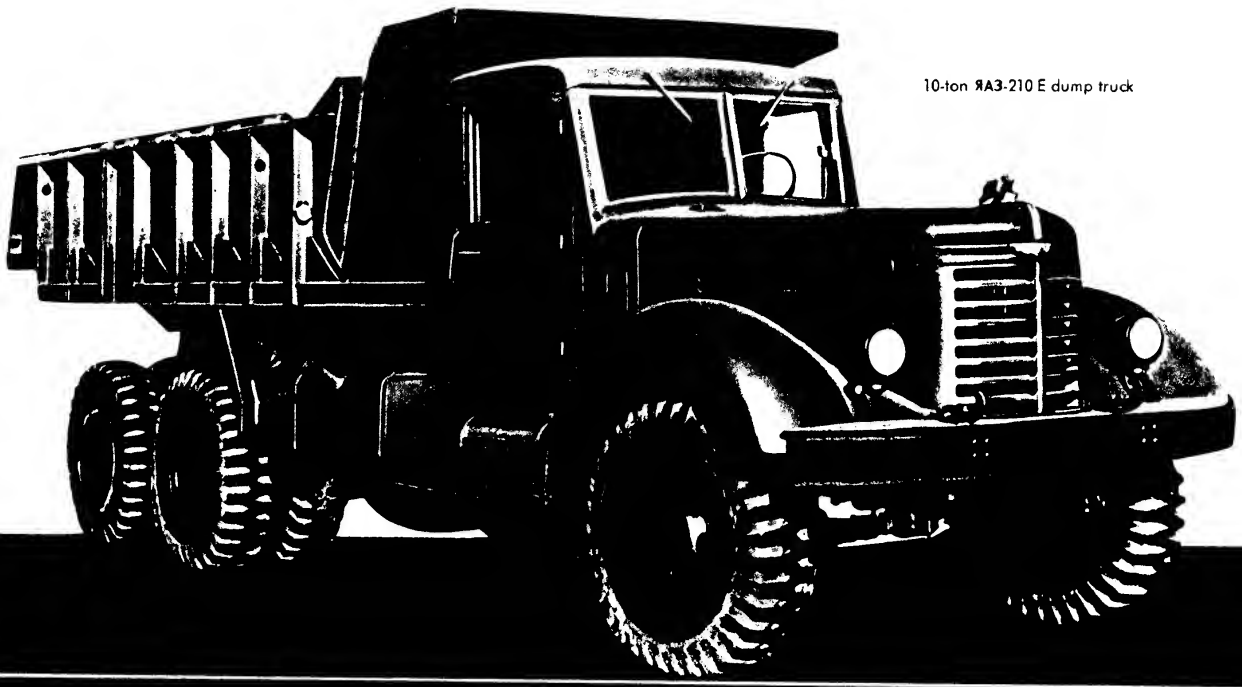
Soviet industry manufactures **Notching Shears** designed for straight and profile notching of sheet metal up to 6.3 mm thick along external or internal contours. These shears are also used in flanging and corrugating. Also available are **Rotary Shears** for longitudinal and circular cutting of sheets up to 10 mm in thickness, **Shears for Preparing and Cutting Scrap** and **Combination Press-Shears** for cutting metal up to 25 mm in thickness. The latter are designed for cutting sheet, bar and profile steel as well as for punching holes and notching. These shears are equipped with a centering device which ensures accurate punching of holes. The frame of this shear is of the gap, welded-steel type.

Portable Press-Shears for use in open-air yards of metal warehouses or shops are also produced.

Interested parties, desiring more detailed information as to the nomenclature of forging and pressing equipment manufactured in the U.S.S.R., should refer to the Vsesojuznoje Objedinenije "Stankoimport", the sole exporter of forging and pressing equipment from the U.S.S.R.

Notching shears for straight and profile notching of sheet metal up to 6.3 mm thick. Model H-535

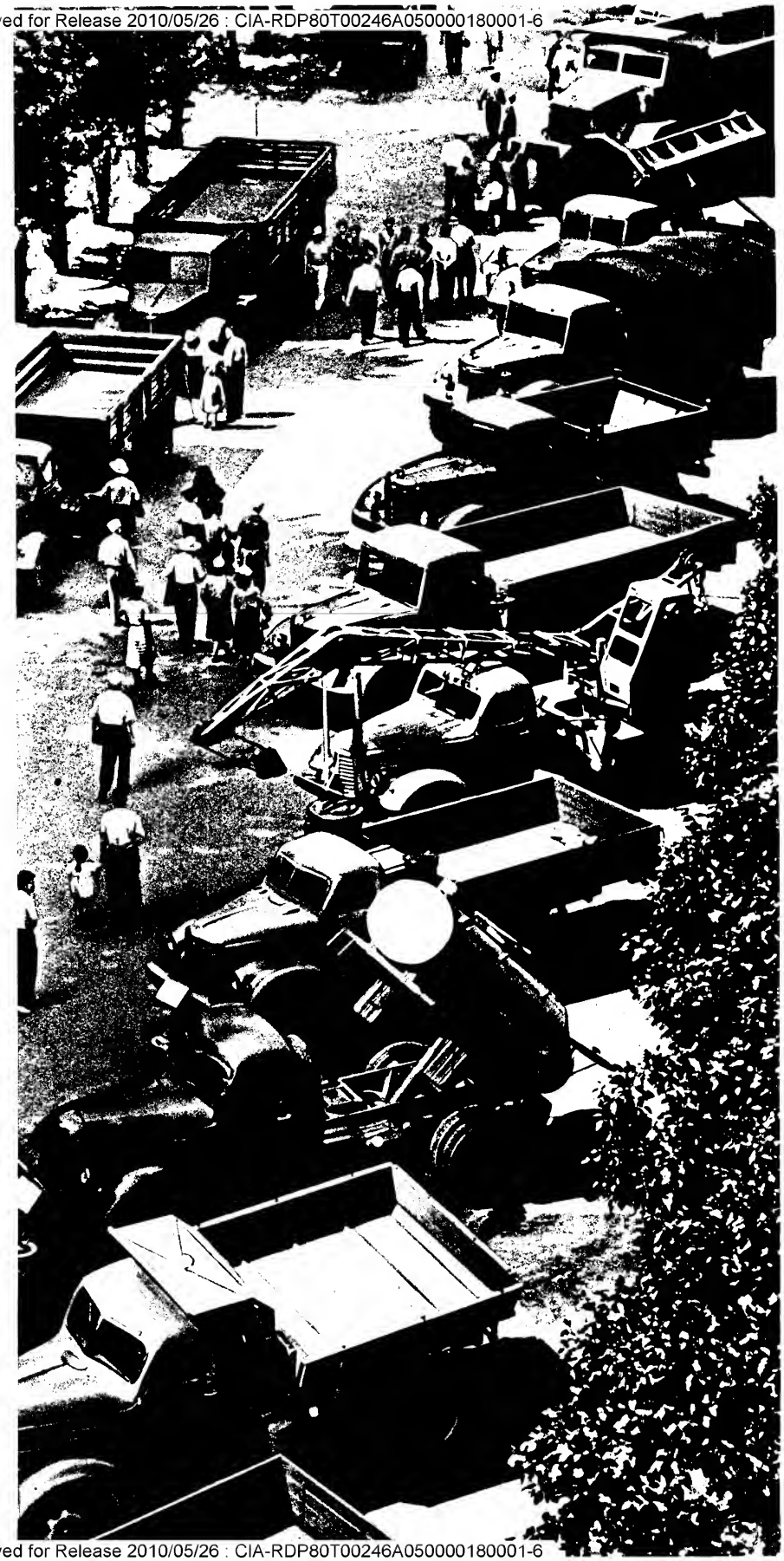




10-ton ЯАЗ-210 E dump truck

AUTOMOBILES

The "Volga"-M-21 automobile (1958 model)



Soviet automobiles posses the best operation qualities: they are reliable, of high strength, durable ond cover many thousands of kilometers without repairs in various climotic conditions. Automobiles equipped with special heaters are delivered to countries in Northern Europe. Automobiles are equipped with forced cooling systems for countries with hot climate, while for countries with humid tropical climatic conditions the parts and assemblies of the automobile are made of special moteriols, ond underga particular treatment.

Below is given brief data on several automobiles among those delivered for export.

PASSENGER AUTOMOBILES

The light automobile "Moskvitch-407" (1958 model) is o four-door all-metal sedan.

Convenient seots for the driver ond passengers, heater far body and windshield defroster, large capacity baggage comportment, radio set, and also drap-back frant seats (allowing the seats to be used for sleeping) make the "Moskvitch" suitable for long tourist trips.

The "Moskvitch-423" station wagon (1958 model) may be used for carrying either four passengers in the body and a 100-kg load, or two passengers and a 250-kg load.

The main specifications of the "Moskvitch-423" are the same as for the "Moskvitch-407". Overall dimensions – 4 055x1 540x1 600 mm. Weight – 935 kg.

The "Volga" M-21 automobile (1958 model) is a capacious, five-seat, four-door sedan with large curved windshield and rear glass. The body has convenient seats, the front one drops back. Convenient seots for the driver and passengers, body heater, radio set and capacious baggage compartment creote everything necessary for comfortoble riding.

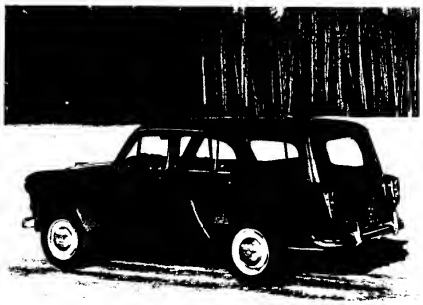
Automatic transmission, powerful brakes and rationol arrangement of devices make driving af the automobile easy.

A new overhead valve engine is installed on the automobile. The Purchaser of the "Volga" automobile may have one delivered to order with mechanicol transmission.

The presence of a twin propeller shaft tube has made it possible to lawer the body floor, ensuring convenient seating of passengers ond stability of the automobile.

The "Volgo"-M-21 automobile (1958 model)

The light automobile "Moskvitch-407" (1958 model)



The "Moskvitch-423" stotion wagon (1958 model)

The "Pobedo" M-72 cross-country outomobile

Balloon tyres and soft suspension ollow the "Volgo" outomobile to poss eosily over poor roods.

The "Pobedo" M-20B five-seat automobile is well known in many countries oll over the world. This outomobile is on oll-metol four-door sedan. It is distinguished by marked reliobility, long life and modest requirements during operation.

The comfortable six-seven-seat ГАЗ-12 automobile enjoys merited success. It is o four-door oll-metol sedan. The body has three rows of seats. The seots in the middle row moy be folded forword, and ploced in recesses in the floor.

Due to its capacious body the ГАЗ-12 automobile is used in many countries os o taxicor.

Good design of the running gear (elastic suspension, reliable efficient hydraulic brakes) ensures smooth running of the automobile and high stability even on icy roads, and olso high dynamic properties when travelling over hilly roads.

A hydroulic clutch is instolled on the automobile for convenient control. The ГАЗ-12 outomobile hos o rodio set, heater with oir conditioner and even distribution of heot in the entire body, and olso o de-froster.

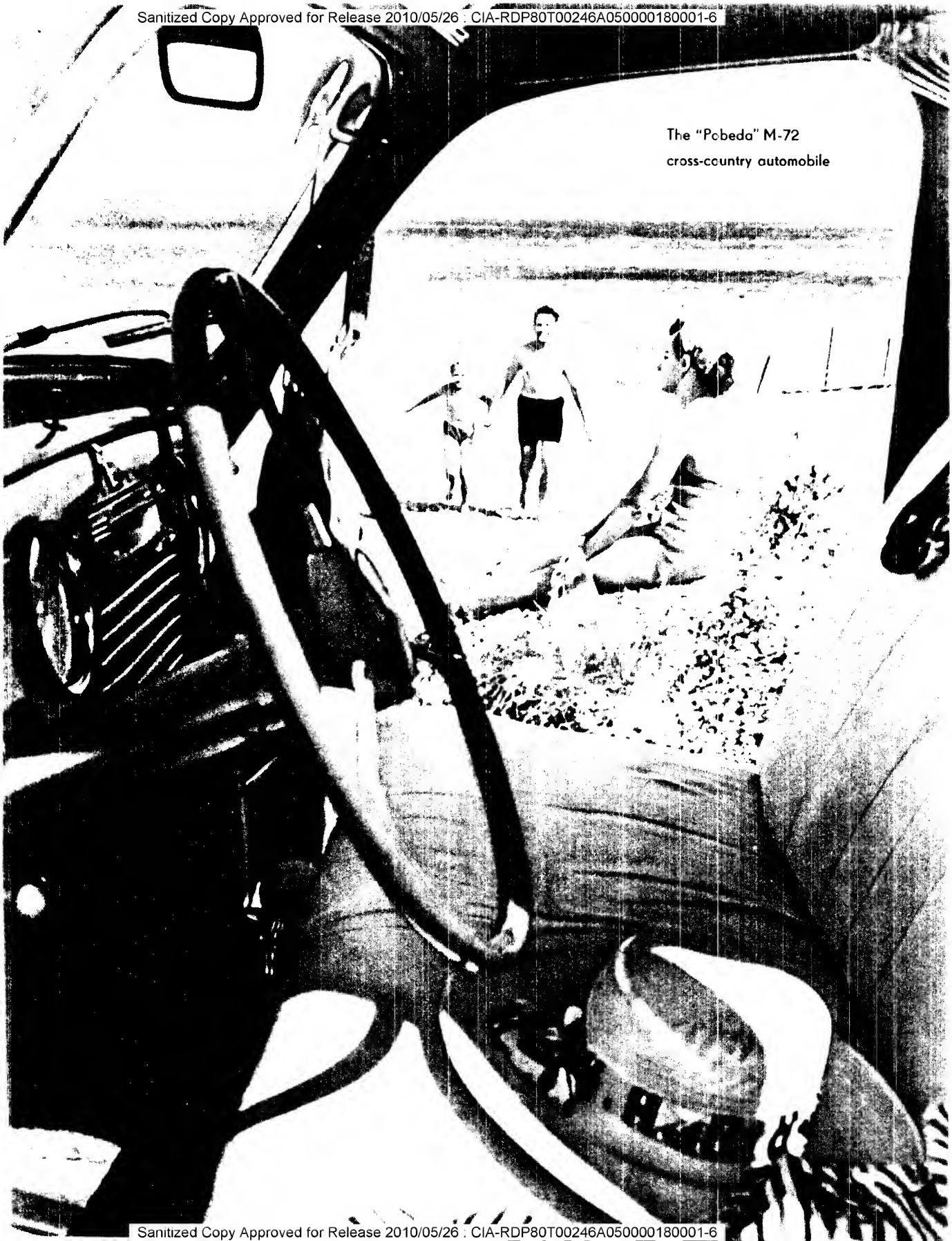
Automobiles of high cross-country performance — "Moskvitch-410" (1958 model), "Pobeda" M-72, ГАЗ-69 and ГАЗ-69А. All wheels of these automobiles are drive ones. Due to the presence of on odditionol drive oxle, high rood clearance, wider wheel base, small turning rodius these outomobiles have high cross-country performance, with great manoeuvrebility, stability and finger-tip control. They are irreplaceable in rough country, travel with eose over roads with deep ruts, through snow-drifts, sand, swamps, and clay soil.

The ГАЗ-69 and ГАЗ-69А automobiles have tents with sectional framework of metal tubes, removable doors ond hinged windshield. They tow freely o one-axle trailer with o load lifting capacity of 500 kg.

When the seats are dropped backthe ГАЗ-69 automobile is converted into o smoll truck with o lifting capacity of 500 kg.

Tests of automobiles with high cross-country performance in countries with various climatic conditions have shown their first-class operation in the most difficult road conditions, and also when travelling up steep hills.

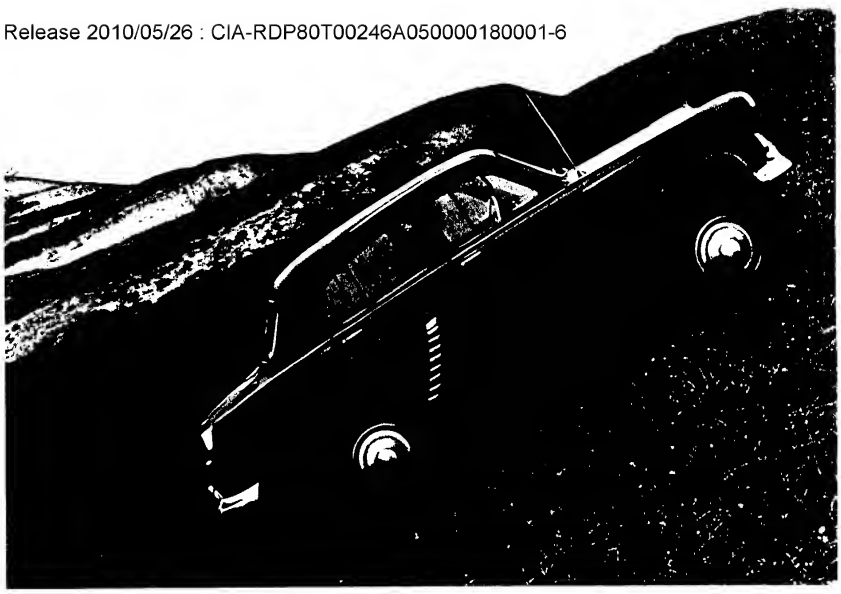
The УАЗ-450 station wagon and УАЗ-450А (1958 model) ambulance are built by our automobile factories on the base of the ГАЗ-69 outomobile.



The "Pobeda" M-72
cross-country automobile

The ЗИЛ-127 interurban motor bus. Seating capacity – 32. Maximum speed with full load – 95 km/hr

Possenger compartment of the ЗИЛ-127 motor bus



The "Moskvitch-410" cross-country automobile (1958 model)

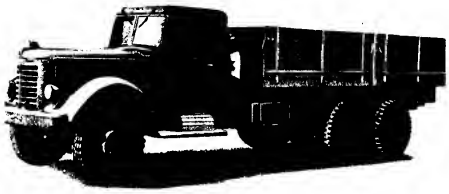
The GAZ-12 automobile

The ГАЗ-69 cross-country automobile

The 2.3-ton ГАЗ-93 dump truck

Specifications of

Wheel base, mm	
Reor wheel gauge, mm	
Rood clearance, mm	
Number of engine cylinders	
Displacement, lit	
Horsepower, H.P.	
Weight of automobile, kg.	
Moximum speed with full lood, km/hr.	



The 12-ton ЯАЗ-210 truck

The ЗИЛ-158 city service motor bus (1958 model)

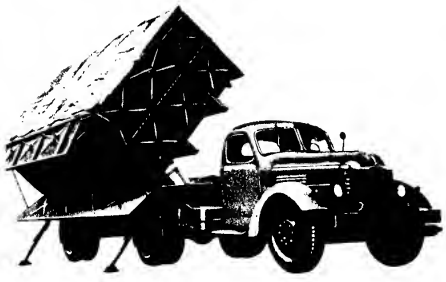
Specifications of Automobiles

Number of doors	
Number of seats	
Wheel base, mm	
Rear wheel gauge, mm	
Road clearance, mm	
Number of cylinders	
Displacement, lit.	
Horsepower at 3600 r.p.m., H.P.	
Weight of automobile, kg	
Maximum speed with full load, km/hr.	

* 4300 4500 r.p.m.

The МАЗ-501 truck. Weight of looded troiler-15 tons

The КАЗ-601 cement delivery truck



The fifth-wheel КАЗ-120 Т truck-troctor with cotton semitrailer КАЗ-716. Weight of looded troiler — 6 tons

ПМГ-19 fire pump-truck

The 4-ton ЗИЛ-585 dump truck

The ПМЗ-17 fire tank-truck

TRUCKS

The outomobile industry of the Soviet Union monufoctures for export trucks from 2 to 12 t lood lifting copocity, trucks-prime movers, truck trailers ond dump trucks with o lood lifting copocity up to 40 t.

The ab ove-mentioned outomobiles ore delivered with vorious modificotions, depending upon the requirements of the Purchaser.

We olso export comfortoble passenger buses for municipol, interurbon ond tourist transport; truck troilers from 0.5 to 40 t; trucks for conveying liquid fuel, woter ond

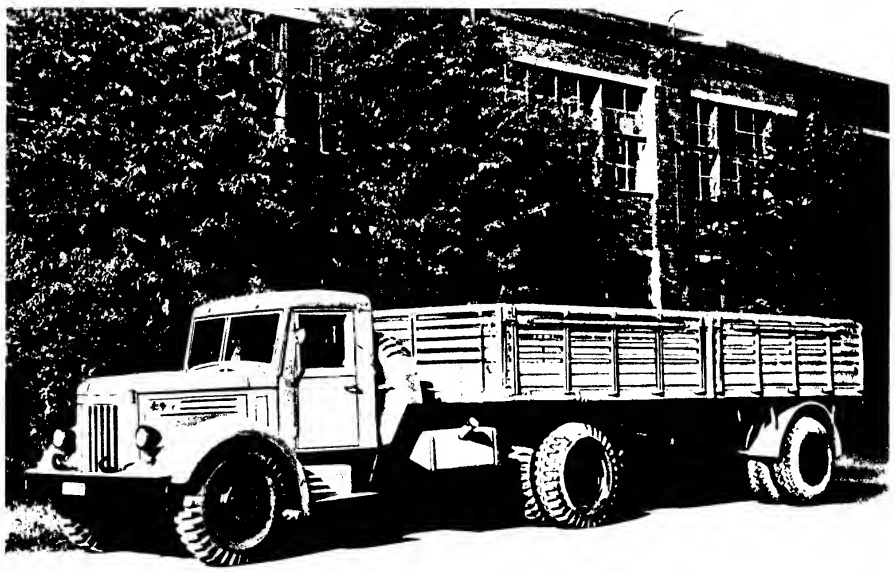
Passenger Automobiles

"Moskvitch-407" (1958 model)	"Volga" M-21 (1958 model)	ГАЗ-12
2370	2700	3200
1220	1420	1500
200	190	200
4	4	6
1.36	2.5	3.48
45	80	90
4500 r.p.m.	4000 r.p.m.	3600 r.p.m.
900	1360	1800
115	130	125

of High Cross-Country Performance

"Moskvitch-410" (1958 model)	"Pobedo" M-72	ГАЗ-69	ГАЗ-69А
4	4	2	4
4	5	8	5
2377	2712	2300	2300
1220	1388	1440	1440
220	210	210	210
4	4	4	4
1.36	2.12	2.12	2.12
45*	52	55	55
950	1560	1525	1535
100	90	90	90

The 7-ton **МАЗ**-200 truck



The fifth-wheel **МАЗ**-200 **В** truck-tractor with **МАЗ**-5215 semi-trailer. Weight of loaded trailer — 24 tons

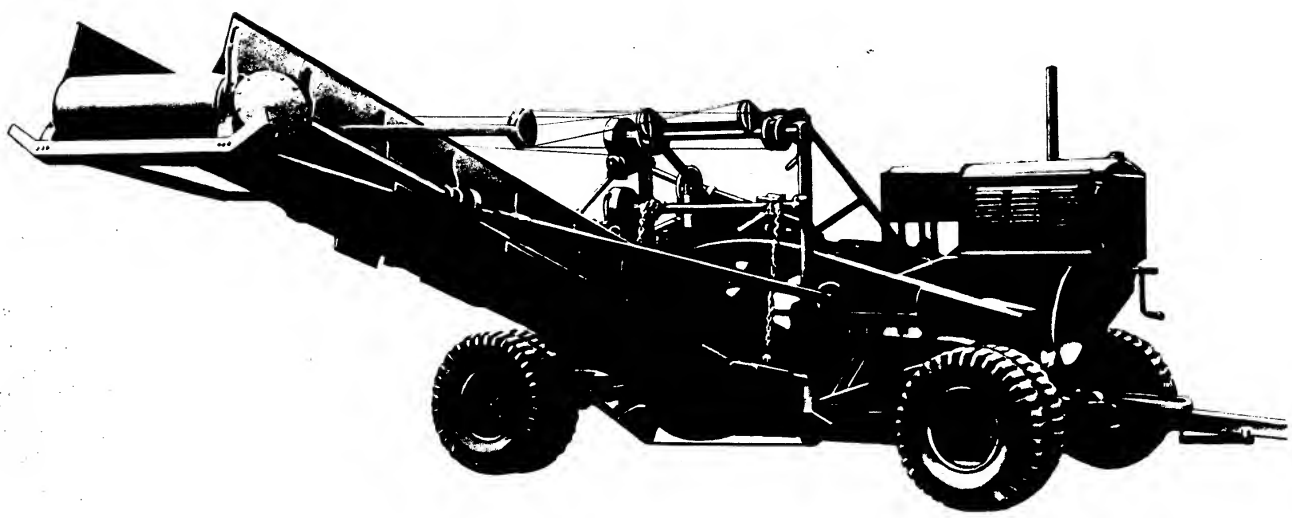
The 4.5-ton **ЗИЛ**-157 cross-country truck (1958 model)

milk; cement-tank trucks; fuellers and oil-priming trucks; fire engines, automobiles for municipal services (sprinklers, snow removing machines, garbage trucks); automobiles with telescopic hoists; refrigerator trucks and other automobiles for special purposes; motorcycles with a displacement from 125 cu.cm to 750 cu.cm; mobile repair shops; equipment for garages and repair shops.

Address enquiries on the delivery of automobiles to Vsesojuznaje Objedinenije "Avtoexport".

ROAD-BUILDING MACHINES

Д-259 universal bulldozer during 8 hour of operation may excavate and move up to 500 cum of earth for a distance of 50 metres. It is successfully used for backfilling trenches, pits and ditches and for cleaning roads



Д-192 elevating grader has a capacity up to 400 cu.m when dumping earth at the side

Owing to the high development of Soviet rood machine-building the requirements of foreign Customers on the delivery of various types of road-building machines from the U.S.S.R. can be met.

Our mochines are working on highway construction in the Argentina, Afghanistan, Bulgaria, Hungary, Viet-Nam, German Democratic Republic, Mongolia, Poland, Rumania, and other countries.

Organizations and firms in the various countries where our machines are being used send us excellent testimonials about their operation.

Below are given brief descriptions of the main types of machines used for highway construction.

Motor Grader Д-265 is of the medium type, self-propelled, on pneumatic tyres. It is designed for grading earth embankments, road maintenance and snow cleaning, being equipped with removable working equipment – scarifier and extender. The scarifier is mounted in place of the moldboard and blade. The moldboard hos universol suspension. Tyre dimensions-12"×20".

Motor Grader Д-144 is of the heavy type. It is successfully used in the erection of embankments and dams, grading of earth fills, moving and levelling earth, and may also be used for cleoning roads of snow. The working parts are moldboard and scarifier. The moldboard blade is removable, mode of high-carbon steel and consists of two parts. Protecting strips are bolted to the blade ends to increase wear-resistance. The scarifier is used for preliminary scarification of firm soil. Tyre dimensions–14"×20". The front wheels may be tilted towards the right or left side at angles up to 23°. The motor grader has hydraulic and mechanical brakes.

Specificatians af Matar Graders

	A-144	A-265
Moldbaard length, mm	3700	3000
Maldbaard height, mm	540	500
Cutting angle, deg	35–80	28–70
Maximum moldbaard lift, mm	400	320
Cutting depth, mm	up ta 200	up ta 150
Frant and rear wheel gauge, mm	2000–2000	1800–1850
Base, mm	5800	5150
Travelling speed, km/hr	up ta 27	up to 32
Overall dimensians, mm:		
length	8200	7750
width	2460	2460
height	3040	2650
Weight of machine, kg	13400	8500

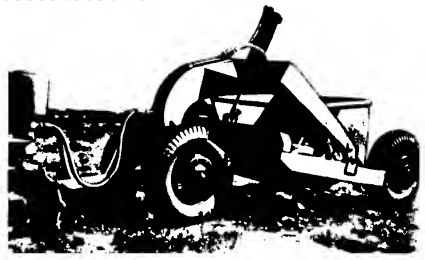
The Д-192 Elevating Grader is designed for eorthwork (excavated earth is dumped at the side or into transport facilities). This machine is delivered together with a C-80 tractor, which has an 80 H.P. Diesel engine. The working part of the machine is a disc blade.

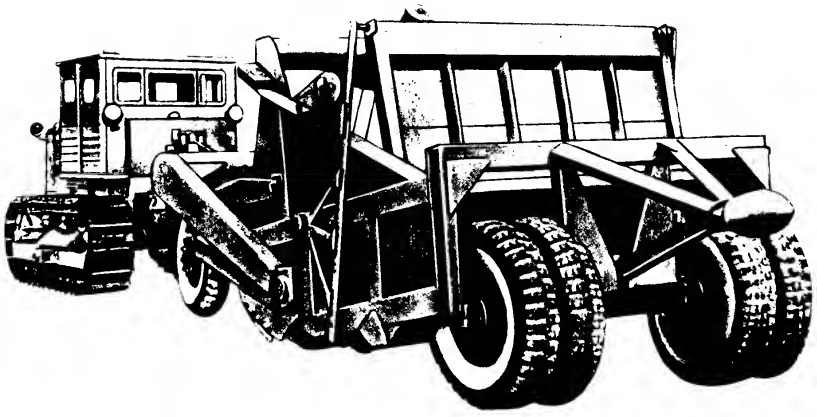
Specifications

Capacity when dumping at the side, cu.m/hr	up to 400
Disc deepening, mm	up ta 650
Disc diameter, mm	up to 800
Cutting angle, deg	20–45
Canveyer dimensians, mm:	
length	8830
width	1200
maximum conveyer lift	4500
Overall dimensions, mm:	
length with drawbar	7400
maximum width with lowered canveyer	9000
height with lowered conveyer	4800
Weight af machine, kg	9750

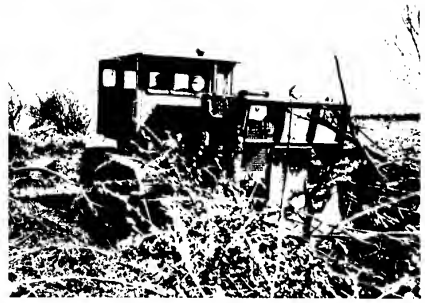
The Д-354 Scraper is used in the construction of sites with a small amount of earthwork, during the erection of fills, levelling of building sites, excavation of cuts and removal of speil in quarries. The scraper

Д-354 scroper has o scoop capocity of 2.75 cu.m. During 8 haurs of aperatian it may excavate ond move for o distonce of 100 metres 180 cu.m of eorth





Д-374 scraper with scoap capacity of 8—10 cu.m. During 8 haurs of operotion moy excavate ond move for a distance of 100 metres 380 cu.m of earth



The Д-210Б ripper has given good results when working on cleaning fields of lorge boulders, ond also when tearing up stumps

is delivered together with a ДТ-54 tractor. The working part of the scraper is the scoop, which is opened and closed with the aid o pivot-lever mechanism.

All working operotions ore executed by hydraulic drive, controlled by the tractor driver. The scraper trovels on four wheels with pneumatic tyres.

The Д-374 Scraper is designed for excovotion ond transportotion of earth for distances up to 1 000 m. This scraper is successfully used in road building ond in industrial, agricultural and irrigation construction work. This type of scraper is towed by a C-80 tractor. The scraper scoop is actuoted by o pulley system from a two-drum cross-shaft winch mounted on the reor woll of the troctor frame.

Specifications of Scrapers

	Д-374	Д-354
Capacity for 8-hr shift, cu.m. (haulage distonce 100 m)	380	180
Scoap copocity, cu.m	8—10	2.75
Cutting width, mm	2600	1900
Moximum cutting depth, mm	300	120—150
Front wheel gouge, mm	1250	900
Reor wheel gauge, mm	1780	1650
Base, mm	5000	3500
Tyre dimensions, mm	12.00×20	10.50×20
Overoll dimensions, mm:		
length	8400	5600
width	3050	2430
height	3090	2400
Weight of scraper, kg	6560	2420

The Д-259 Universal Bulldozer is designed for excavation ond moving of eorth on hillsides ond steep hills, bockfilling of trenches, pits and ditches, moving the earth sidewise when travelling along the backfilled trench, for grading operotions, ond olso for cleoning roods of snow. The Д-259 bulldozer is mounted on a C-80 tractor. The moldboard is lowered and lifted by o rope system from a Д-269 single-drum friction winch mounted on the reor woll of the troctor frome. On the universal frame may also be mounted a scarifier, brush chopper ore snow plow.

The Д-159Б Bulldozer is designed for excavotion ond moving of earth for smoll distances (up to 50 m), groding operotions, stockpiling of eorth, and also for cleaning roads of snow.

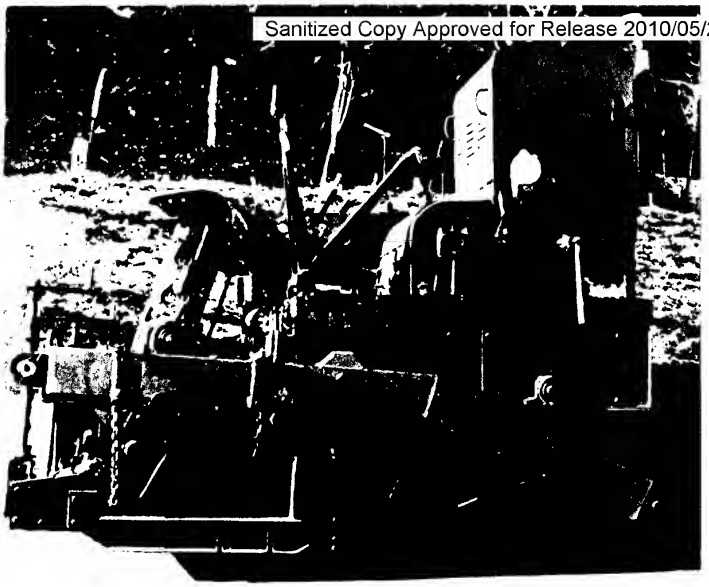
The bulldozer is mounted on o ДТ-54 troctor. The bulldozer frome is pivoted on the crossbeam fastened by shackles to the tractor frame side members. Two rocking hydroulic cylinders are installed in the front part of the tractor frame. The cylinder pistons ore pivoted on the reor moldboard wall and execute lifting ond lowering of the moldboord.

The bulldozer is equipped with hydroulic drive mounted in the reor part of the tractor. The hydraulic control pump is octuoted by the tractor engine power toke-off shaft. The moldboord is controlled from the troctor driver's seat.

Specifications of Bulldozers

	Д-159 Б	Д-259
Copacity during 8 hours (when moving eorth for o distonce of 50 m), cu.m.	up to 250	up to 500
Moldboord length, mm	2280	4150
Moldboord height, mm	800	1000
Moximum deepening of moldboord, mm	150	1000
Moximum moldboord lift, mm	600	1100
Pressure in hydraulic system, atm	30	
Overall dimensions, mm:		
length	4300	5500
width	2280	4150
height	2300	2985
Total weight of bulldozer, kg	6450	14000

The Д-210Б Ripper is successfully used for cleaning fields of large boulders, and olso for pulling up stumps ond moving for smoll distonces branches, brush, stumps, and rocks.



The Д-150A Asphalt Paver during one hour of operation may lay compress and level 100 tons of asphalt concrete on the bed of a highway under construction

The Д-210Б ripper is mounted on a C-80 tractor. The following are the main working parts: crossbeam, frame, pushers, winch, and control mechanism. The crossbeam is a panel of lattice design with four teeth in the lower part. The crossbeam is lifted mechanically by a single-drum winch. The ripper is controlled from the tractor cab.

Specifications

Width of strip, mm	1474
Total crossbeam height, mm	1950
Number of teeth	4
Length of teeth, mm	400
Deepening of crossbeam, mm	550
Crossbeam lift height, mm	1050
Lift speed, m/sec	0.5
Overall dimensions, mm	
length	5850
width	2824
height	2769
Total weight of machine, kg	13238

The Д-150A Asphalt Paver is designed for paving various types of asphalt-concrete mixtures upon a prepared road bed. The hopper of the paver is loaded by dump-trucks without stopping the paver. The mass of asphalt loaded into the paver is laid with the aid of a scraper conveyer in an even layer, the layer then being compressed and levelled.

The Д-150A asphalt paver is a self-propelled machine on crawlers with a У-5МА engine (gasoline) of 40 H.P.

Specifications

Capacity, t/hr	up to 100
Width of paved strip, mm	3030—3630
Depth of paved layer, mm	30—150
Forward speed, m/min	16—34
Reverse speed, m/min	4.5—34
Overall dimensions, mm:	
length	5060
width	3200
height	2600
Weight of machine, kg	12000

The Д-162А Rooter is designed for the scarification of heavy and rocky earth, and also for tearing up old road pavements during the construction, repair and reconstruction of highways. The Д-162А rooter is towed by a C-80 crawler tractor. The working parts of the rooter are cast steel shanks having removable teeth at their ends.

The rooter frame together with the shanks may be lifted for travelling into transport position and is lowered for digging the teeth into the ground. The teeth are dug into the ground under the weight of the rooter frame, the frame is lifted by winch cables, mounted on the rooter draw tongue.

For increasing the pressure of the shanks upon the ground, which is necessary for scarification of heavy soils, the frame has a box in the upper part, which during operation may be filled with ballast.

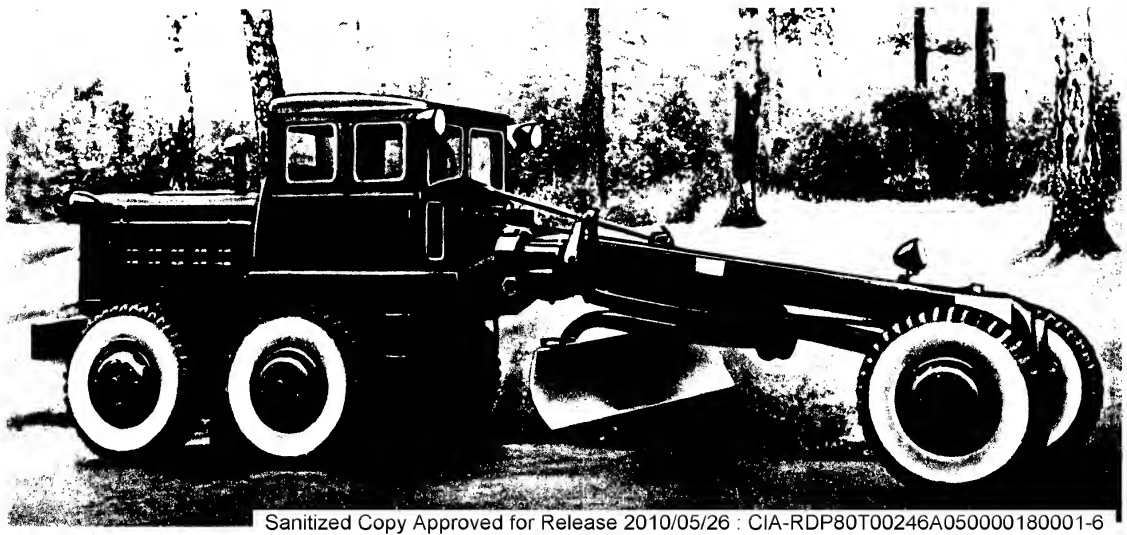
Specifications

Number of teeth	3—5
Width of scarification, mm	2400
Depth of scarification, mm	up to 550
Overall dimensions, mm:	
length with draw tongue	5435
width	2500
Height in working position, mm	2125
Weight (minus ballast), kg	3526

The design offices of Soviet factories are working on the further development of road-building machines, and also on the designing of new types of road-building machines ensuring the mechanization of the entire complex of operations connected with highway construction.

When designing new types of road-building machines the wide use of various hydraulic devices is provided for.

Please address all orders for road-building machines and enquiries to V/O "Avtoexport", Smolenskoyo-Sennaya Pl., 32/34, Moscow, G-200. Cable address: Avtoexport Moscow.



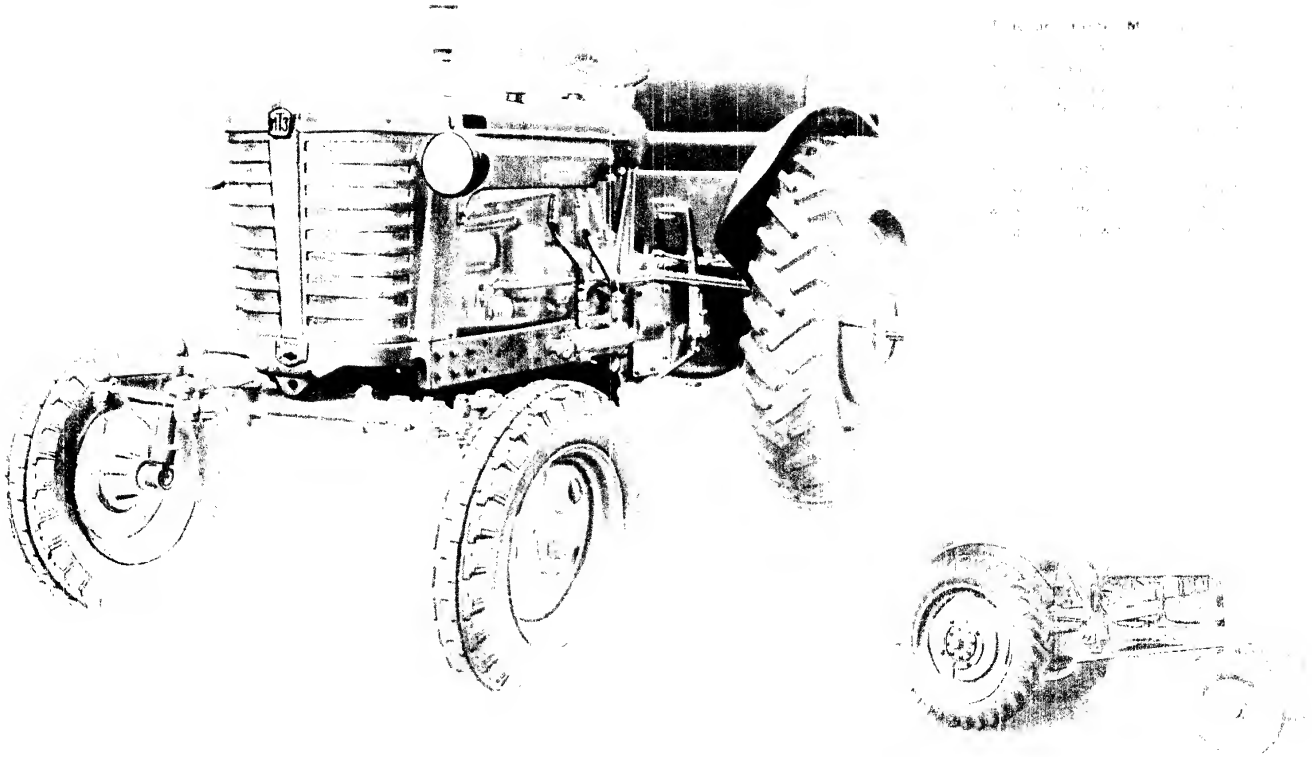
Д-265 motor grader with 54 H.P. Diesel engine. Working speed up to 10 km/hr

On all matters relating to the Purchases in the USSR of Motor Graders, Scrapers Bulldozers, Rippers, Asphalt-Concrete Spreaders, Rollers and other

machines used in road construction, please communicate with V/O "Avtoexport", Moscow, G-200

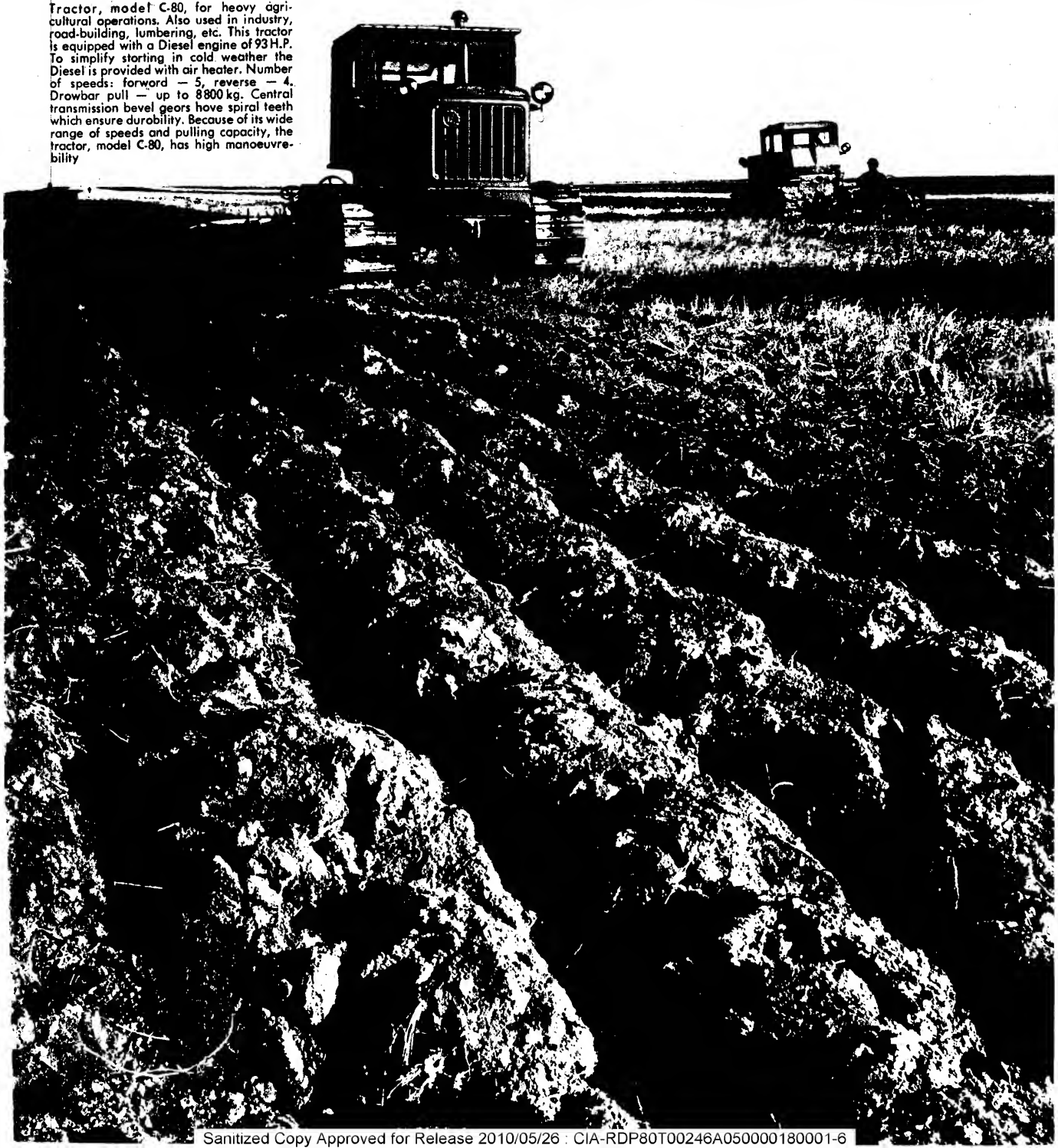
ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ

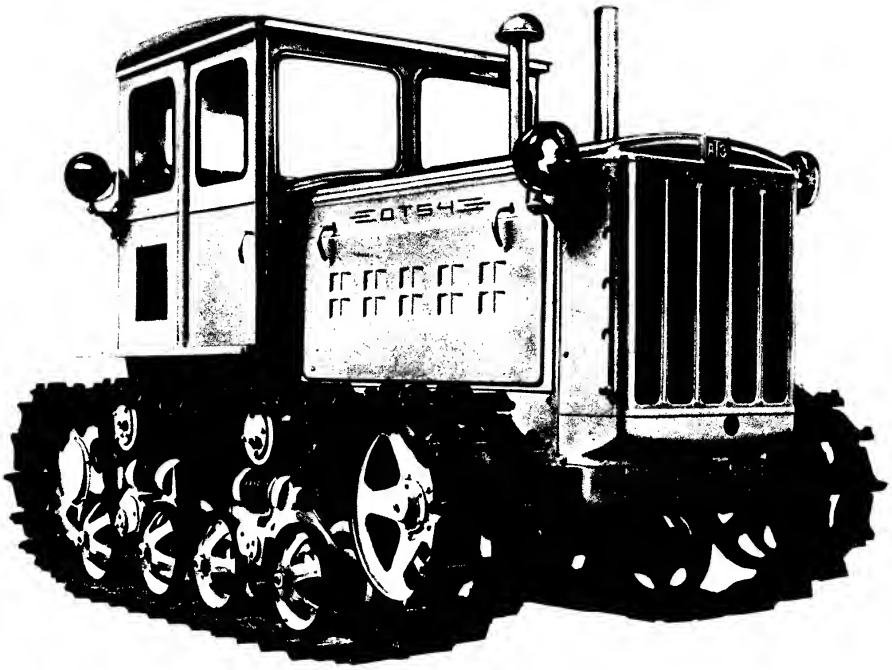
АВТОЭКСПОРТ



AGRICULTURAL MACHINERY AND TRACTORS

Tractor, model C-80, for heovy agricultural operations. Also used in industry, road-building, lumbering, etc. This tractor is equipped with a Diesel engine of 93 H.P. To simplify storting in cold weather the Diesel is provided with air heater. Number of speeds: forword — 5, reverse — 4. Drowbar pull — up to 8800 kg. Central transmission bevel geors hove spiral teeth which ensure durobility. Because of its wide range of speeds and pulling capacity, the tractor, model C-80, has high manoeuvrebility





Tractor, model ДТ-54. This tractor is equipped with a highly efficient Diesel engine of 54 H.P. Number of speeds: forward — 5, reverse — 1. Drawbar pull — up to 2850 kg. This model is intended for various agricultural operations and also for road building and other jobs. Good cross-country performance and monoeuvrebility, simple and easy control make this tractor highly efficient

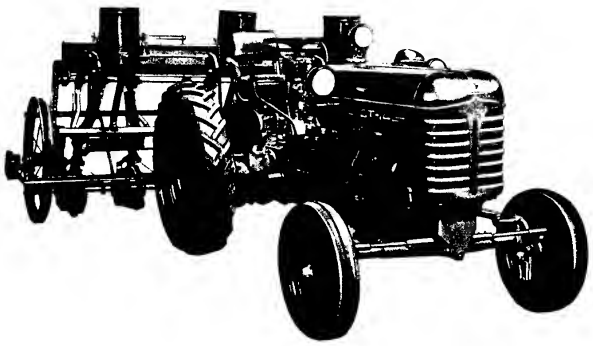
A great number of modern, economical, high-productive machines have been designed in the U.S.S.R. During the yeors of the Fifth Five-Year Plan alone, over 200 models of machines were introduced into the country's agriculture.

The wide range of Soviet agricultural machinery makes it possible to occomplish complex mechanization of aperation pertaining to the growing ond horvesting of vorious agricultural crops as well as mechanizing aperatians in cottle-breeding.

Since the agricultural mochines ond troctors produced by Soviet plonts ore odopted for operotion in various climatic ond soil conditians it is possible to comply with ony demands made by our Customers.

The brief specifications ond illustrotions included in this article may serve to interest mony componies ond firms.

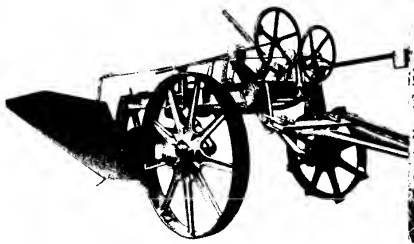
The sole exporter of Soviet agricultural mochinery and tractars is the All-Union corporation "Avtoexport" (Vsesojuznoje Objedinenije "Avtoexport"), Moscow.

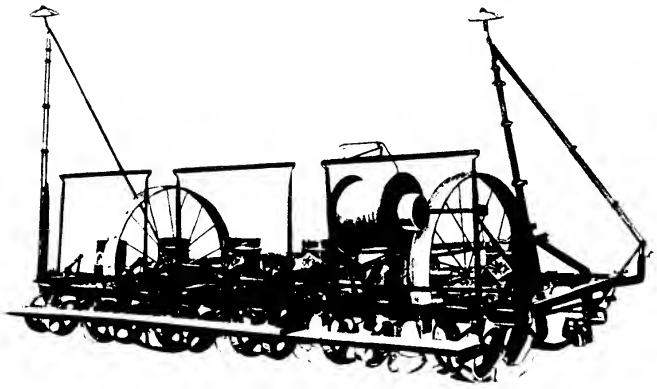


Universol tractor, model ДТ-14. Operated with various mounted and hitched agricultural machinery in vegetable gardens, orchards, vineyards, industrial crop plantations. Equipped with pneumatic tyres it con also perform transport jobs. Number of speeds: forword — 5, reverse — 4. An ouxiliory reduced speed is provided for operation with seedling-planting machines

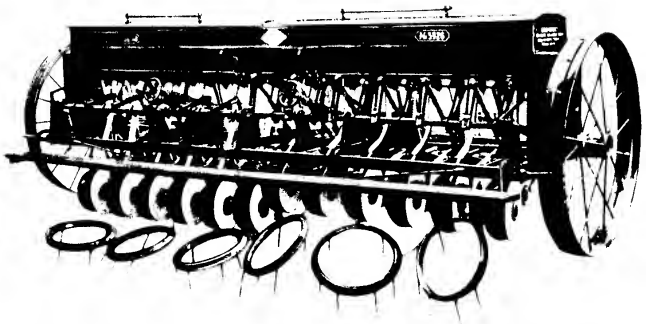
Five-bottom tractor plough, model П 5-35 Ц, for breaking of virgin and long-fallow soils with specific resistance 1.3 kg/sq.cm. Maximum depth of ploughing — 27 cm, working width — 1.75 m. Efficiency — 0.6 ha per hr, weight of plough — 1550 kg

Vineyard single-bottom tractor plough with skim-coulter, model ПП-50 М, for ploughing soil under vineyards and orchards to o depth up to 60 cm. Plough working width — 50 cm. Efficiency — 0.2 ha per hr, weight — 1650 kg

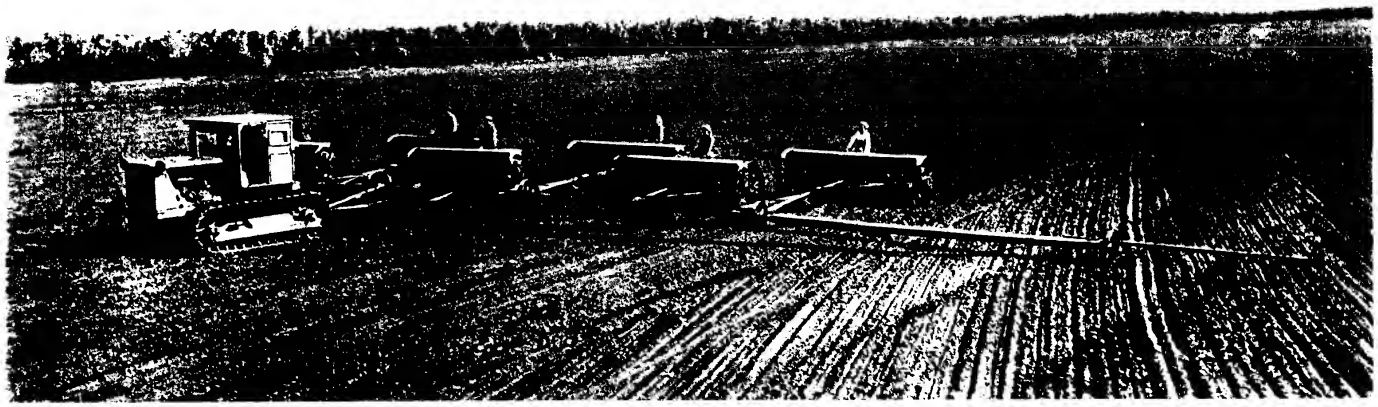




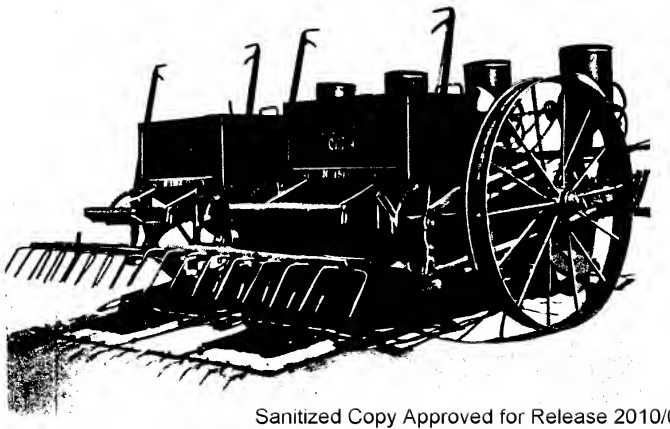
Tractor planter, model СКПК-6 В, for check-row planting of corn and sunflower with inter-rows of 70 cm. Planter working width — from 3.6 to 4.2 m, efficiency — up to 1.3 ha per hr. Weight — 950 kg



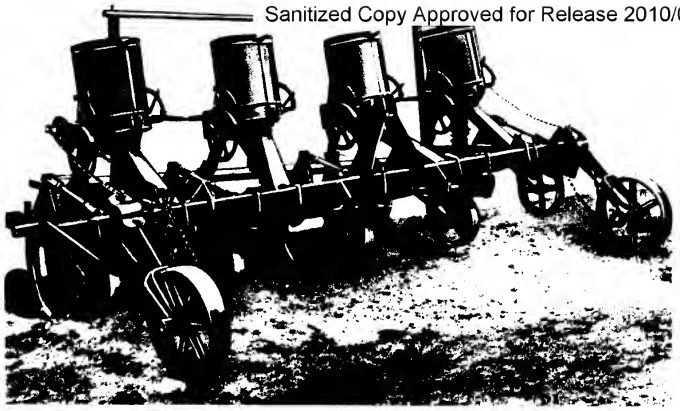
Tractor narrow strip grain drill, model СУБ-48. Working width — 3.6 m, efficiency — 1.5 ha per hr. Drill weight — 1100 kg



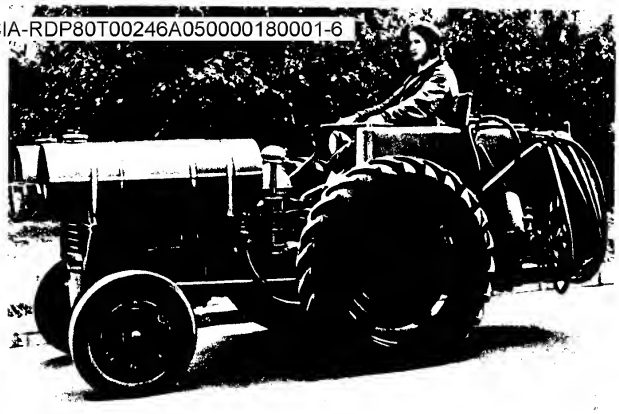
Four-raw potato planter, model СКП-4, for check-raw potata planting with ridged or plain covering. It simultaneously drops mineral or organic mineral granulated fertilizers into the planting hallows. Planter working width — 2.8 m, efficiency — up to 0.8 ha per hr. Weight 1400 kg



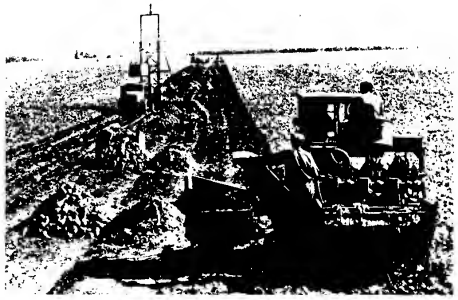
Tractor orchard cultivator, model КСВ-2.5, for working of inter-raws in archards. Working width — 2.5 m, efficiency — 1 ha per hr, cultivator weight — 633 kg



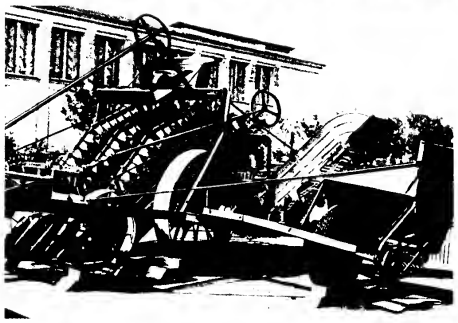
Tractor-mounted lister-cultivator, model КОН-2.8 П, for working of potato inter-rows (loosening and listering of potato rows with simultaneous introduction of mineral fertilizers). Working width — 2.8 m, efficiency — 1.4 ha per hr, cultivator weight — 685 kg



Sprayer, model ОНК. This sprayer ensures dependable protection of plants from pests and diseases

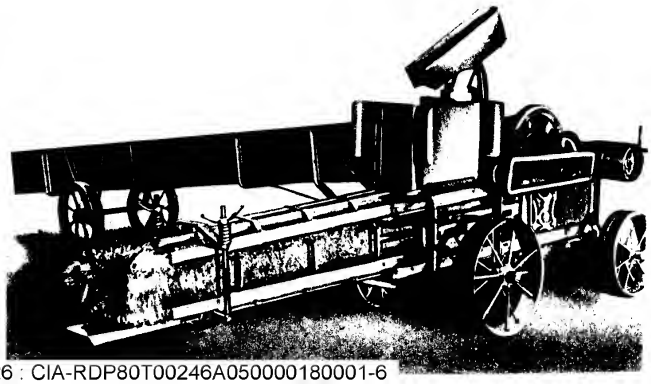


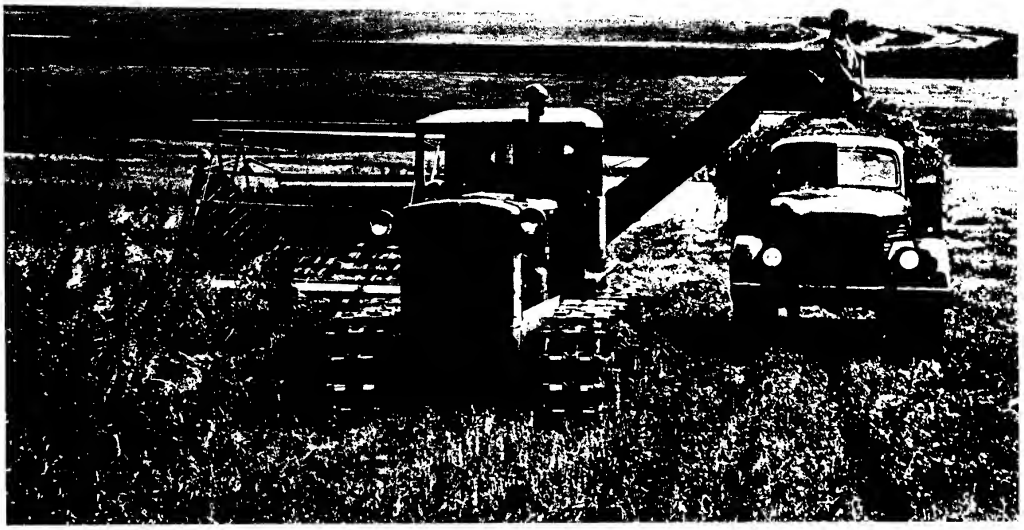
Long-range watering jet unit, model ДДП-30 С. Use of this unit increases labour productivity 8—10 times and reduces water consumption by 2—3 times as compared with furrow watering



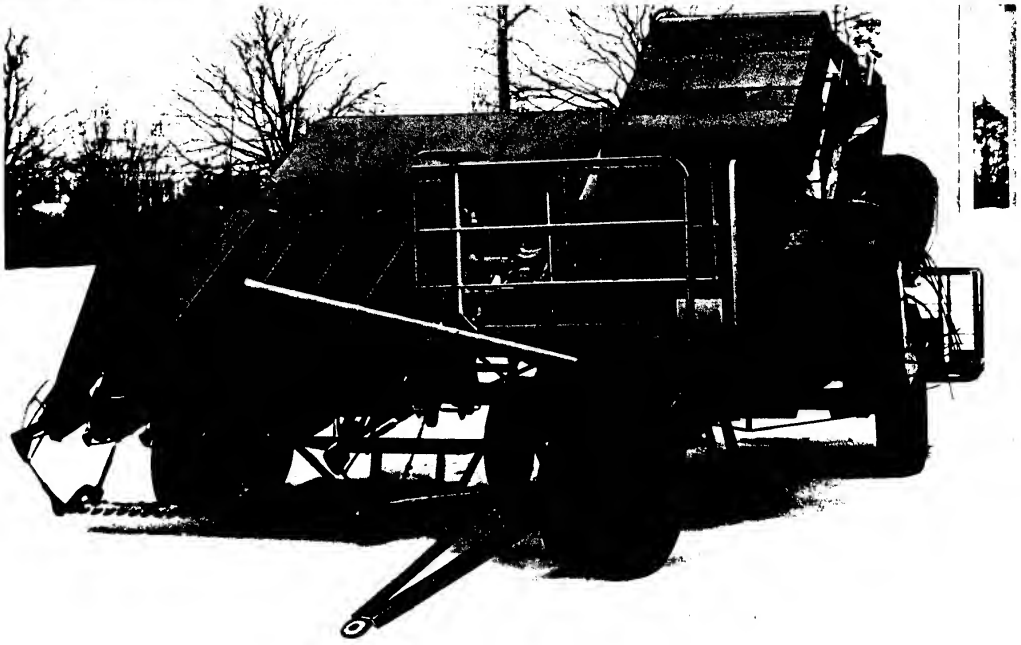
Three-row combine, model СКЕМ-3, for sugar-beet harvesting (underdigging and pulling out of beet roots, cutting off leaves, cleaning of beet roots from earth and dumping them in heaps). Working width of the combine — 1.33 m, efficiency — 0.75 ha per hr, weight — 2500 kg. The combine is driven by a 35 H.P. tractor power take-off shaft

Mechanical hay press, model ПСМ-5.0 А. Its efficiency — 5 t per hr



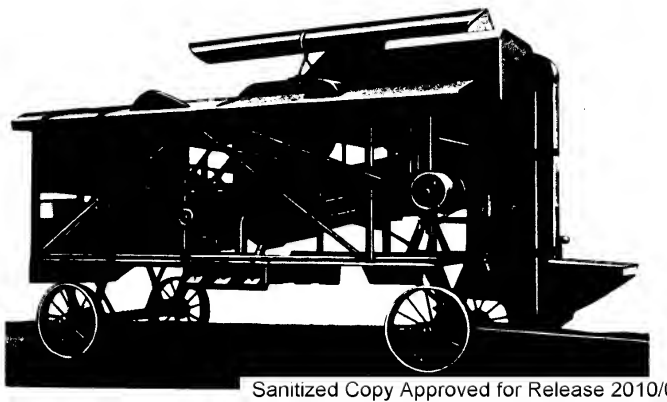


Ensilage combine, model СК-2.6, for harvesting ensilage crops and simultaneously cutting and loading them into transport vehicles. Efficiency — up to 1.7 ha per hr, combine weight — 2900 kg. The combine operates with a 54 H.P. tractor

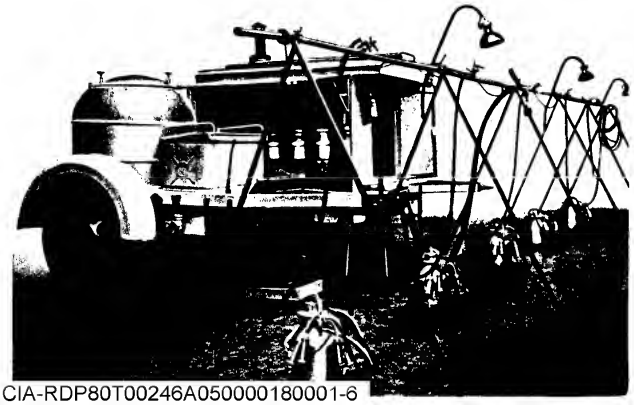


Harvesting machine, model ЖК-2.1, for harvesting jute. This machine cuts off the stalks, cleans them from grass, small plants, and tangles and lays them down on the harvested part of the field in unbound sheaves. Working width of the machine — 2.1 m, efficiency — up to 0.94 ha per hr, weight — 1 700 kg. The machine is driven by a 37 H.P. tractor power take-off shaft

Grain-cleaning machine, model ОСМ-3 У



Transportable milking installation, model ПДУ-1 with 10 milking units



SOVIET FOREIGN TRADE ORGANIZATIONS

Foreign Trade in the Soviet Union is a monopoly of the State. The direct management of Soviet foreign trade is vested in the Ministry of Foreign Trade in accordance with the Constitution of the U.S.S.R.

In virtue of the foreign trade monopoly, all export and import operations are accomplished either by the State through its trade representative abroad or by individual economic establishments vested with special powers by the State. Such are the All-Union foreign trade associations, which, as a rule, now conduct all export and import transactions.

Each of these associations is guided by its own charter and canducts operations in the categories of goods specified in its statutes.

The foreign trade associations are independent economic organizations exercising independent juridical powers and operating on the principle of self-maintenance. Acting as an independent juridical unit, the association is answerable for its operations and functions with such of its property which can be attached in accordance with existing legislation of the U.S.S.R. The charter determines the amount of funds at the disposal of the association as charter capital.

Executing its functions, the foreign trade association has the right, within the framework of the respective laws, to conclude various agreements, transactions and carry out other legal operations, including credit and clearance with any institutions, organizations or private parties in the U.S.S.R. and abroad as well as right to act as plaintiff or defendant in court or arbitration.

Each association conducts export of goods from the Soviet Union on the basis of contracts it has concluded with the respective foreign agents. In accordance with the rules of the association, all foreign trade transactions that it concludes in Moscow (including contracts providing for export of goods from the U.S.S.R.) must be signed by two persons on behalf of the association, one of the chairman of the association or his assistant, the other – a person vested with the rigth of signing foreign export transactions by virtue of a warrant of attorney signed by the chairman of the association; promissory notes and other financial pledges in foreign trade issued by the association in Moscow must bear the signatures of the chairman or his assistant and the chief bookkeeper of the association. When concluding foreign trade transactions (as well as when issuing promissory notes and other financial pledges) beyond Moscow (in the Soviet Union and abroad), such transactions (or financial pledges) must be signed on behalf of the association by two persons, vested with warrant of attorney by the chairman of the association. The names and surnames of persons vested with the right to sign foreign trade transactions and financial pledges in foreign trade on behalf of the association must be published in the official organ of the Ministry of Foreign Trade in the U.S.S.R. the magazine "Foreign Trade".

Each transaction (contract) is concluded by the respective association as a result of preliminary negotiations between the association's representatives and the opposite foreign agents. The term "negotiation" here signifies oral exchange of opinions through direct contact between the interested parties (or their representatives) as well as exchange of correspondence pertaining to the conditions of the contract in mind.

To render a foreign trade transaction (contract) effective, it is necessary that the association and the opposite agents reach agreement on all conditions (points) of the contract in their negotiations and that these agreed conditions be fixed in writing. It is not essential, however, that the contract be concluded in the shape of a single document; a contract is regarded as binding if a proposal has been submitted by one party in writing containing the necessary conditions of the contract, and a reply has been forthcoming from the other party accepting the conditions submitted.

It is self-evident that the above procedure of signing foreign trade contracts must be observed in all cases.

Soviet foreign trade associations act as owners in disposing by sale abroad such goods as they have; they are vested with the right of transferring the same goods to the possession of the Buyer. Acting as Buyers of foreign goods, the Soviet foreign trade associations acquire the right of ownership over said goods. The Soviet foreign trade associations may thus enter into legal transactions with the opposite foreign agents with full right of ownership of the goods for sale and full right of ownership of the goods they buy.

The goods included in the nomenclature of the foreign trade associations may be found in the following list which includes the ship chartering association "Sovfracht" with indication of the operations fulfilled by the respective association.

The associations are listed in alphabetical order by their abbreviated (firm) names.

V/O "Avtoexport" exports: motor-cars, motor buses, trolley buses, fire engines, heavy duty lorries and their trailers, trailers for heavy goods, snow cleaners and snow loaders, motor-cycles, tractors of various types, road-building machines, agricultural machines and implements, equipment for communications, control-and-precision, meteorological, geophysical, laboratory and other instruments with the exception of optical instruments.

ADDRESS: MOSCOW, G-200, "AVTOEXPORT"

V/O "Machinoexport" exports: metallurgical, mining and oil industry equipment, mining pump, compressor and transporter-cranes equipment as well as industrial armatures; it also exports and imports railway rolling stock.

ADDRESS: MOSCOW, G-200, "MACHINOIMPORT"

V/O "Machinoexport" exports: metallurgical, mining and oil industry equipment, electrical machines, high-and low-voltage equipment, equipment necessary for the production of cables, electrical machinery for hauling and lifting, power plant aggregates, electro-thermal and electric welding equipment, compressors and ventilators, industrial armatures for pipelines, transporter-cranes and construction machinery, equipment for the production of building materials and glass, equipment for the chemical, cellulose-paper, wood-working, light and food industry, and also polygraphic equipment.

ADDRESS: MOSCOW, G-200, "MACHINOEXPORT"

V/O "Mezhdunarodnaya Kniga" exports: printed matter – books, newspapers, magazines, music scores, placards, postcards, reproductions, albums and maps; gramophone records, gramophone matrices and soundtrack films; postage stamps for collections.

V/O "Mezhdunarodnaya Kniga" conducts transactions for the publication of Soviet books and music abroad.

This building accommodates the Ministry of Foreign Trade of the U.S.S.R. and many Soviet Foreign Trade organizations

V O "Mezhdunarodnaya Kniga" imparts: books, newspapers, journals, gramophone records.

ADDRESS: MOSCOW, G-200, "MEZHKNIGA"

V/O "Prodintarg" exports and imports: caviar, fish, meat, and meat products, fats and oils, tinned food, vodka, wines and liquors, various foodstuffs, horses, pedigree stock and cattle for sloughter, and also animals for zoological gardens.

ADDRESS: MOSCOW, G-200, "PRODINTORG"

V/O "Promsyrioimport" exports and imports: cost iron, ferro-alloys, steel stocks, girders, U-bars, graded ond high-graded steel, sheet-steel, ribboned and wire metal, cast-iron and steel pipes, hardware, etc.

ADDRESS: MOSCOW, G-200, "PROMSYRIOIMPORT"

V/O "Raznoimport" imports and exports: ores and non-ferrous metal concentrates, non-ferrous metals and alloys, rolled non-ferrous metals, tin-foils powders, cable equipment natural and synthetic rubber, rubber technical goods, including pneumatic tyres and inner tubes, cork-tree bark ond cork goods.

ADDRESS: MOSCOW, G-200, "RAZNOIMPORT"

V O "Raznoexport" exports and imports: tobacco and tobacco goods, building materials, mica, salt, matches and match-wood, gut, raw materials for tanneries, ready-made leather goods, handicraft wares, porcelain, foience, crystal, watches and clocks, knitted goods, light and winter lingerie, typewriters, calculators, sewing machines, bicycles, shotguns, fire extinguishers, insulators for high and low voltage, electric bulbs, electric fixtures, washing machines and refrigerators.

ADDRESS: MOSCOW, K-6, "RAZNOEXPORT"

V/O "Sojuznefteexport" exports: crude oil, heavy petroleum, motor-cor and aviation petrol, kerosine and various grades of Diesel oil, lubricating, oils, bitumen, vaseline, poraffin and dissolvents.

ADDRESS: MOSCOW, G-200, "SOJUZNEFTEEXPORT"

V O "Sujuzpromexport" exports and imports: manganese, chrome and iron ores, os well os non-metallic minerals, asbestos and osbestine goods, coal, onthracites, coke, pitch coke, mineral fertilizers, clay, kaolin, fireproof moteriols, precious metals, kino-coal, electrade and anode materiols.

ADDRESS: MOSCOW, G-200, "SOJUZPROMEXPORT"

V/O „Sojuzpushnina" exports fur-skins, raw, dyed and dressed Astrakhan skins. In oddition V/O "Sojuzpushnina" exports and imports: rugs, bristle and hoir.

ADDRESS: MOSCOW, 49, "SOJUZPUSHNINA"

V/O "Sojuzkhimexport" exports and imports: chemicals, medicines, Tibetan medicines, medical equipment and instruments, essential oils, aromatic substances, perfumery, casmetics, and other goods.

ADDRESS: MOSCOW, G-200, "SOJUZKHIMEXPORT"

V/O "Stankoimport" exports and imports: metal-cutting and woodworking lathes, drop-forge equipment, measuring and other precision instruments, apparatus and machines for the testing of metals, optical equipment and instruments, hand, electrical and pneumatic devices, cutting tools for metal and wood, fitter's assembly tools, articles of solid allays, abradonts, roller and ball bearings, cinema-apparatus and cinema equipment, geodetic apparatus and instruments, photoequipment.

ADDRESS: MOSCOW, G-200, "STANKOIMPORT"

V/O "Sudoimpart" exports and imports ships and ship equipment and also carries out repairs and reconstruction of Soviet ships abroad.

ADDRESS: MOSCOW, G-200, "SUDOIMPORT"

V/O "Sovexportfilm" exports Soviet films and buys foreign films to be leased in the Soviet Union. Besides art films, "Sovexportfilm" exports documentary, popular-science and cartoon films, ond also the newsreels: "News of the Day", "Art", "Soviet Sport", "Science and Technics" and "Agricultural News".

If desired by the Client, "Sovexportfilm" provides its Customers with positives of its films or essential materials for developing film-copies.

ADDRESS: MOSCOW, K-104, "SOVEXPORTFILM"

V/O "Technopromimport" imports technological equipment for various branches of industry, speciol motor-cars far public utility services, road-building and agricultural machines, control and measuring instruments, with the exception of optical instruments, and cummunication equipment.

ADDRESS: MOSCOW, G-200, "TECHNOPROMIMPORT"

V/O "Technoexport" exports aggregate equipment far various industries ond industrial construction, including: enterprises of ferrous and non-ferrous metallurgy, iron ore mines, cool mines, refineries, heat and power plants and hydropower plants, transmission lines, hydro-technical projects, machine-building, lathe-building, tool-making and ball-bearing plants, motor-car works, agricultural machinery and tractor plants, building material plants, enterprises of the chemical industry, oil cracking plants, oil reservoirs and pipe-lines, cellulose and paper factories, polygraphic works and wood-working factories, textile enterprises, elevatars, flour mills, plants and factories of the food industry, ports, bridges and other engineering structures, electric railways, radio stations, cinema studias ond theatres, hospitols, laboratories, veterinary hospitals and other structures.

V O "Technoexport" conducts research on basic data for projects of various enterprises and constructions as well as geological research, aerophotography and research into the designing of enterprises and structures abroad; it undertakes to supervise the assembly and commissioning of industrial and other enterprises, to train national cadres both in the U.S.S.R. and abroad for work in industrial and other enterprises.

ADDRESS: MOSCOW, G-200, "TECHNOEXPORT"

V/O "Exportljon" exports: cotton, flax, hemp, woll, goat fleece, row silk and silk by-products, cotton and silk fabrics, sewing thread and fishing nets.

V O "Exportljan" imports: cotton, wool, jute and jute goods, hemp and sisal, cables and ropes, fishing nets, rayan yarn and staple fibre, waal and silk materials.

ADDRESS: MOSCOW, G-200, "EXPORTLJON"

V/O "Exportles" exports: softwood lumber, birch and alder plywood, timber props, pulpwood, printing paper, bleached and unbleached wood pulp, and other timber and paper goods.

V O "Exportles" imports: technical paper and cardboard, viscose and other lumber materials and goods made from wood.

ADDRESS: MOSCOW-CENTRE, "EXPORTLES"

V/O Exportkhleb" exports: wheat, rye, barley, oats, maize, rice, oil cakes, beans, shoots and seed for agriculture.

V/O "Exportkhleb" imports: rice, oil seed, planting seed, and other materiols.

ADDRESS: MOSCOW, G-200, "EXPORTKHLEB"

V/O "Vostokintorg" conducts trade with Sintsian Uiguri Autonomous Region of the Chinese People's Republic, the Mongolian People's Republic, Afghanistan, Iran and Yemen.

V/O "Vostokintorg" exports rolled ferrous metal, building materials, paper, various agricultural implements, chemicals, medicines, cloths, footwear, crockery, watches, cameras, sewing machines, bicycles, radio receivers, tobocco goods, perfumery, foodstuffs, etc.

V/O "Vostokintorg" imports wool, cotton, raw materials far the tanning and fur industries, rice, coffee, fish, caviar, dried fruit and various other merchandise usually exported by the afore-mentianed countries of the East.

ADDRESS: MOSCOW, V-49, "VOSTOKINTORG"

V/O "Sovfracht" conducts chortering of Soviet and foreign sea-going ond river vessels for the shipment of Soviet export and import cargoes as well as foreign cargoes to all destinations. V O "Sovfracht" conducts transportation of freight by all manner of transport, loading and unloading, storage and insurance, and ships all freights and cargaes abroad overland ond overseas. "Sovfracht" also organizes transit shipment of freights through the Soviet Union.

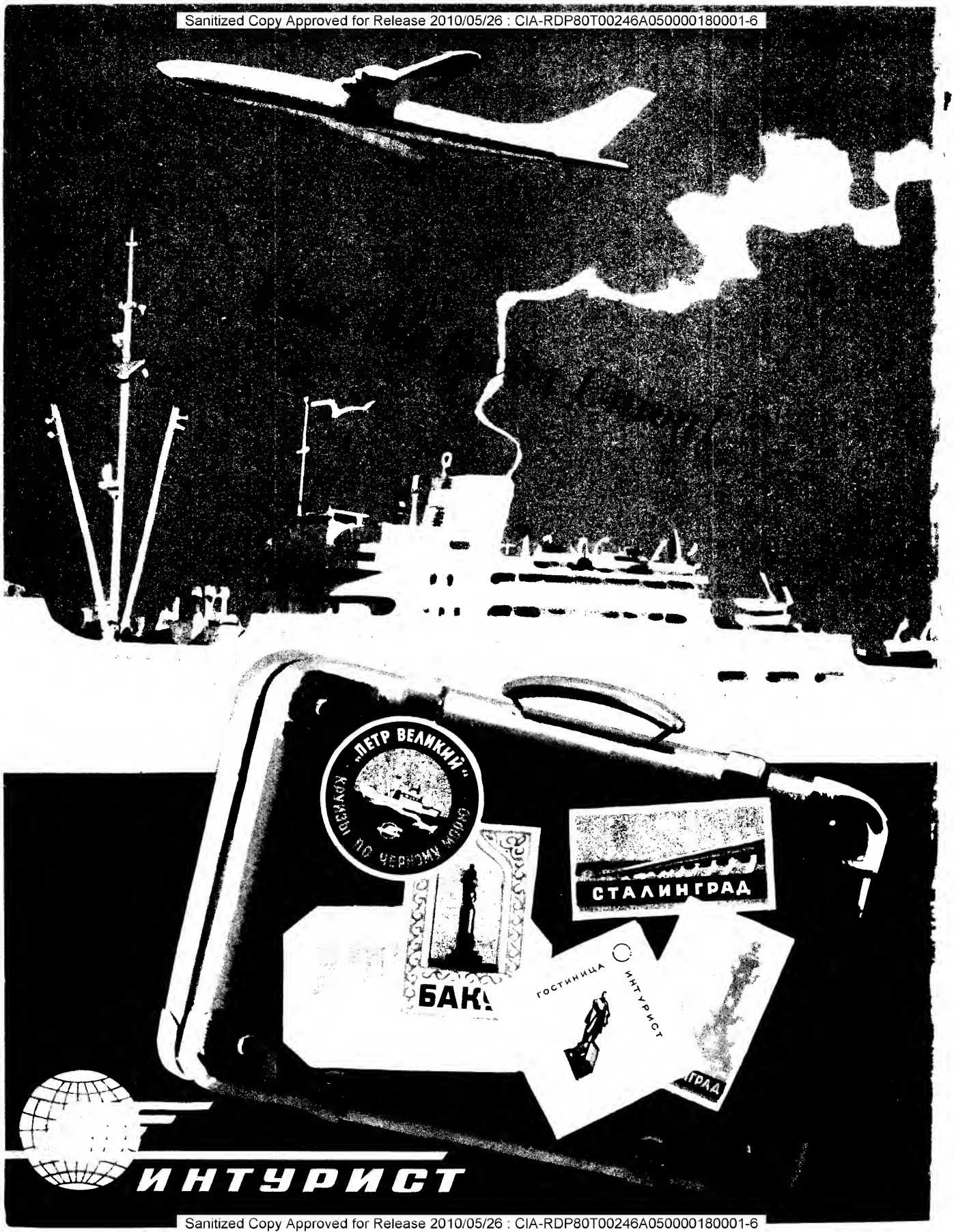
ADDRESS: MOSCOW-CENTRE, "SOVFRACHT"

Soviet Foodstuff Goods

ARE KNOWN IN MOST OF THE COUNTRIES OF THE WORLD AS HIGH-QUALITY GOODS.

IN PARTICULARLY GREAT DEMAND ARE OUR CAVIARS, CRABMEATS, SALMON AND OTHER CANNED GOODS, CHAMPAGNES, COGNACS, WINES, VODKA, CONFECTIONERIES, ETC.

FOR DETAILED INFORMATION PLEASE APPLY TO V/O "PRODINTORG", MOSCOW, G-200



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